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A Lecture
ON
JEJUNAL AND GASTRO-JEJUNAL ULCERS.

DELIVERED AT THE MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, LONDON,

BY

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GENTLEMEN,—I have selected this subject for three reasons—first, because I have had considerable experience of jejunal and gastro-jejunal ulcers; secondly, because I consider that the disease occurs much more frequently as a sequel of gastro-enterostomy than the profession is quite willing to acknowledge; and, thirdly, because I have certain suggestions to make both with regard to prevention and treatment.

My operative experience extends to seven cases, some of which have followed operations that I have myself performed, and others have followed on operations performed by eminent surgeons, whose technique, according to our present ideas, is beyond reproach.

Gastro-enterostomy—an operation which can be performed with an operative risk of 1 or under 1 per cent.—is one of the most useful in surgery, when performed on suitable cases. But the fact that certain methods or refinements of technique afford safeguards against nearly all the dangers of the operation, does not of necessity show that unfavourable sequelae may not arise in some other way, and that the dangers, which do not make their appearance until many months, or it may be years, after the original operation, may possibly be greater than ordinarily recognized, and very serious in their results. I think the time has arrived for a reconsideration of the operation of gastro-enterostomy, of the class of cases in which it is justifiable to perform it, and of whether or not one can suggest a better way in some cases of giving the stomach and duodenum absolute rest until ulcers or other disease may have healed or been remedied.

Only recently, sepsis was the most serious factor to be contended with, after which followed the fear of shock and haemorrhage, to say nothing of the dangers of starvation from fear of feeding, and failure of union in the anastomosed viscera.

Practically the whole of these dangers have been overcome by improved technique, but the serious complications that have not yet been successfully combated are jejunal and gastro-jejunal ulcers—the former being wholly in the jejunum, the latter at the margin of the anastomotic opening. I am able to show specimens of both of these types of ulcer.

The etiology of ulcers of the type which have hitherto, rightly or wrongly, been termed peptic ulcer, is extremely interesting, and has given rise to much speculation and to many theories.

In the stomach ulcer is extremely common, in the duodenum equally so, and certainly much more frequent than hitherto has been supposed, but in the jejunum it has been generally thought to be very rare. Probably it never occurs in the jejunum except as a complication of the operation of gastro-enterostomy.

Braun, I believe, first described the occurrence of such an ulcer in the jejunum of man, and since that time the subject has received attention at the hands of Hahn, Kausch, Körte, Kocher, Mayo, Paterson, myself, and others. In 1903 I prepared a paper on the subject which was published in vol. lxxxvii of the *Medico-Chirurgical Transactions*. It contained, I believed at the time, the first case described in English literature. I was then able to collect 16 cases from various sources, but many have since been reported by other surgeons. In Mr. Paterson's paper he referred to 2 of his own and to 61 recorded cases.

Dr. W. J. Mayo believes that the greater part of, if not all, gastro-jejunal ulcers are due to failures in technique in the operation of gastro-enterostomy, whereas true jejunal ulcers seem to be unavoidable. In the Rochester clinic, out of 1,141 gastro-enterostomies, so far as could be ascertained, there had been no case of pure jejunal ulcer, though there had been an operative experience of three gastro-jejunal ulcers—one the result of an impacted Murphy button, occurring three years and nine months after operation, the button having been retained in the stomach. The ulcer in this case was excised, and another operation performed over a Mayo-Robson bone bobbin, the patient making a good recovery. The second case was the result of retention of an infected suture, and occurred seven months after operation. The ulcer was excised, and another gastro-enterostomy performed, the patient making a good recovery. The third case was the result of an infected haematoma in the suture line. The whole opening, including the ulcer, was excised two and a half years later and a Finney's operation performed.

It would seem, from a study of reported cases, that no type of gastro-enterostomy renders the patient immune from this form of ulcer, since it has occurred after anterior gastro-enterostomy, after posterior gastro-enterostomy with a loop, both with and without lateral anastomosis, after posterior gastro-enterostomy without a loop, after Roux's operation, as well as after the use of the Murphy button and my decalcified bone bobbin, and after the employment of simple sutures.

As to the cause, some interesting experiments were performed by Mr. Paterson, and described in a paper he read before the Royal Society of Medicine in June, 1909. His observations seem to confirm what had previously been suspected—that the cause of jejunal ulcer after gastro-enterostomy was due to excessive acidity of the gastric juice.

I had previously expressed an opinion, which I still hold, that sufficient care is not exercised in dieting patients who have undergone the operation of gastro-enterostomy, and that hyperchlorhydria and sepsis combine to produce ulceration; in fact, the cause of this form of ulcer is exactly the same as that of duodenal and gastric ulcers.

In order to prevent this complication it has seemed to me that absorbable material should only be used for the marginal suture, but, even where chromic catgut only has been used, the disease has sometimes followed. A modification of its application may therefore be advisable, only fine catgut being applied as a marginal suture to

appose but not constrict the mucous margins, and two lines of sutures, serous and sero-muscular, employed to unite the outer and middle coats of the viscera.

The dangers of jejunal ulcer arise not only from painful indigestion (the pain simulating that of duodenal ulcer, only varying its position), but also from a recurrence of symptoms of ulcer often associated with haemorrhage, and not infrequently ending in perforation.

The danger of perforation directly into the peritoneum is greater after posterior than after anterior gastro-enterostomy, as after the anterior operation omental adhesions frequently tend to prevent perforation, as shown by the first case I reported in 1903, where the ulceration ultimately reached to the abdominal wall, having passed through the adherent omentum.

But the mesocolon may also prevent perforation into the peritoneal cavity, as shown by one of the specimens exhibited, which demonstrates a gastro-jejunal ulcer that had perforated the margin of the opening between the stomach and the jejunum, and was extending into the mesocolon.

Symptoms.

If after a period of good health subsequent to the operation of gastro-enterostomy a patient begins to complain of acidity, flatulence and discomfort after meals; followed after a time by definite pain from an hour to two or three hours after food, and relieved temporarily by taking milk or some other light diet, or some form of alkali such as sodium carbonate; if the pain occurs on the left of the umbilicus, and is associated with marked tenderness and rigidity of the left rectus, the suspicion of ulcer of the jejunum will arise.

The complication of haematemesis or melaena or even the presence of occult blood in the faeces will make the diagnosis fairly certain; but if with all these symptoms a swollen and tender loop of bowel can be felt in the region of the anastomosis, or below and to the left of the umbilicus, the surgeon can no longer be in doubt as to the nature of the disease.

The symptoms of acute perforation resemble those of peritonitis following on perforation of a gastric ulcer.

Treatment.

With regard to treatment, the old adage that "prevention is better than cure" has special significance in connexion with jejunal ulcer. Not only must the profession set its face against the wholesale performance of gastro-enterostomy for every gastric ailment and limit it to suitable cases, particularly those with obstructed pylorus, but we must also try to effect such improvements in technique that jejunal or gastro-jejunal ulceration will not be likely to occur. More especially it behoves us not to neglect the medical aspect of the case, and to this end it is important that operating surgeons should bear in mind that the operation of gastro-enterostomy is at best only an incident in the treatment of diseases of the stomach and duodenum, and that the operator should in all these cases be closely allied with the physicians or the medical attendants who have the after-care of the patients. To my mind careful dieting and medical treatment subsequent to operation and for some considerable time afterwards are absolutely indispensable.

If jejunal or gastro-jejunal ulcer has been diagnosed by a recurrence of symptoms at some interval after the operation of gastro-enterostomy and the case fails to yield to general treatment, the only course open to the surgeon is to perform abdominal section and to thoroughly examine the jejunum at and near the point of anastomosis.

If the ulceration is at the gastro-jejunal anastomosis or in the jejunum, and the original ulcer at the pylorus or in the duodenum has healed, the jejunum may be detached from the stomach, the ulcerated area excised, and the openings in the stomach and jejunum closed.

If the pyloric or duodenal ulcer, in healing, has led to stenosis, an anastomotic opening cannot be spared, and either a new site for the gastro-enterostomy must be selected on the posterior wall of the stomach, or an anterior gastro-enterostomy after Roux's method may have to be done after closing the original opening.

If the ulceration is jejunal, and the area involved extensive, the diseased part of the jejunum may have to be excised, and according to the healthy condition or otherwise of the duodenum and pylorus, the healthy jejunum may be united end to end and the stomach opening closed, or a new gastro-enterostomy may be performed at a fresh site.

Should the jejunal ulcer be distinct, and the margin of the anastomotic opening be found healthy, it may be advisable to excise the ulcer and to repair the bowel without excising the jejunum more extensively, and without interfering with the anastomotic opening.

Should the patient be profoundly ill and unable to bear a prolonged operation, a loop of jejunum some inches below the disease may be brought to the surface, and the operation of jejunostomy performed. Through a tube introduced into the jejunum the patient can be fed, and the ulcerated area, whether jejunum, duodenum or stomach, can be put at complete rest until healing is effected, when the artificial opening can be allowed to close.

I feel sure that this operation of jejunostomy has not received the attention it merits, as in extreme cases I have found it most safe and useful. I have employed it in haematemesis where the bleeding point could not be found, in chronic ulceration with great thickening, as in plastic linitis, and in chronic perforation, where the parts were hopelessly matted, and the patient was unfit to bear a prolonged operation.

But the operation of jejunostomy may be found useful in all conditions where it is necessary to give the stomach complete rest for a time, whether the disease be in the stomach or duodenum, and I believe that in many cases of ulcer near the cardiac end of the stomach, or along the lesser curvature, as also in some ulcers of the duodenum that have failed to yield to medical treatment, the operation of jejunostomy, if there is no pyloric stenosis, will come to be the operation of choice, as by its means the patient can be well fed for months without a particle of food being allowed in the stomach, thus giving the ulcer, whatever site it may occupy, absolute rest and freedom from irritation. After a period, when healing of the ulcer or ulcers has resulted, the small tube can be left out, and the minute opening will close voluntarily.

Were I speaking simply from theory I should hesitate to advance these opinions, but an extensive practical experience both of gastro-jejunostomy and of jejunostomy enables me to speak with confidence in stating my views.

The Operation of Jejunostomy.

The operation I have performed consists in taking a loop of the jejunum well beyond its origin, just sufficiently long to reach the surface without tension. A small incision is then made into the top of the loop just large enough to admit a No. 12 Jacques catheter, which is inserted and passed for fully 3 inches down the distal arm of the loop. This is fixed to the margin of the incision in the gut by a silk or thread suture, and the entrance of the tube into the bowel is further secured by two purse-string sutures one over the other. The top of the loop is fixed to the parietal peritoneum and posterior aponeurosis by two stitches and the wound closed around the tube. The patient can then be fed at once with egg, milk, and a little brandy. The whole operation can be done in from ten to fifteen minutes, and with no shock and very little visceral exposure.

As a further precaution, the loop may be short-circuited, but this is not absolutely necessary, and, should the patient be seriously ill, the short-circuiting is undesirable.

For the operation to be a success the bowel must be placed so that it will serve two purposes: (1) To permit the passage onwards of the bile and pancreatic fluid poured into the intestine above the artificial fistula; and (2) to allow of food being introduced into the fistula without fear of regurgitation either of the food or of the intestinal contents.

The feeding is done by means of a funnel and tube that will slip over the catheter, and it can be repeated every four hours, or more or less frequently, according to the requirement of the case.

The operation will be found useful in the following conditions:

1. Widespread cancer of the stomach too advanced for gastrectomy and too extensive for gastrostomy. I have found it useful in a number of such cases. By securing complete rest to the stomach, it stops haemorrhage, relieves pain, diminishes the size of the tumour and prolongs life very considerably.

2. In general cicatricial contraction of the stomach, due to the swallowing of caustic fluids, in which the stomach has been so far damaged that it no longer performs its functions or even allows of the passage onwards of food.

3. In chronic ulcer of the stomach giving rise to haemorrhage, pain, or vomiting, and to malnutrition; and where the patient is too ill to bear partial gastrectomy, which can, however, be subsequently done if thought needful after the patient's condition had been restored by adequate feeding.

4. In some cases of chronic duodenal ulcer, associated with hyperchlorhydria, in which there may be a fear of jejunal ulcer subsequently developing if gastro-enterostomy be performed.

5. In certain cases of duodenal ulcer in very stout subjects where it is extremely difficult to perform a posterior gastro-enterostomy, and in which violent haemorrhage has only recently occurred and may be again excited by dragging on the stomach.

6. In jejunal or gastro-jejunal ulcer where the patient is thought to be too ill to bear one of the extensive operations previously mentioned; or where, the disease being slight, it is thought that the complete rest to the stomach and upper jejunum that can be given by a jejunostomy will at the same time relieve the hyperchlorhydria and cure the ulcer. Neumann has, in fact, suggested the operation for hyperchlorhydria alone.

7. In recurring haematemesis failing to yield to ordinary treatment, and where on exploration no ulcer or other removable cause can be discovered.

8. In persistent vomiting threatening life, as in the severe and sometimes fatal vomiting of pregnancy, where no food whatever can be retained in the stomach.

URETHRAL CALCULI,

WITH SPECIAL REFERENCE TO ENCYSTED CALCULI OF THE PROSTATIC URETHRA.

BY

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NOMENCLATURE.

SOME discussion has found a place in the literature of this subject as to the proper application of the term "urethral calculus." The term should be used for all calculi which are lodged in the urethra, whether formed in the urethra itself or elsewhere. A calculus in the bladder is none the less a vesical calculus if there is evidence of its having descended from the kidney, and the same applies to urethral calculi. The question of nomenclature was first raised by Lieblein,[1] who argued that the title "urethral stone" should be used only for stones which are formed primarily in that channel, or stones arrested in the urethra which increase in size after lodgement. The same argument was developed by Kaufmann,[2] and has been approved by others. It would introduce, however, an entirely new principle into the nomenclature of calculi in the urinary passages, and upon clinical grounds there is much to be said against it. With regard to calculi in general, the qualifying adjective used has always been one which has reference to the site of the stone at the time of description; the adjective is clinical, and has no pathogenetic significance. The adjective "urethral" should be employed in this sense, and the attempt to give it a pathogenic significance is, in the present writer's opinion, misdirected.

IMPACTED CALCULI.

Urethral calculi are either calculi which have been formed in the urinary passages above and have lodged in the urethra, or calculi which are formed in the urethra itself, or in some cavity or channel communicating with it.

The lodged or impacted calculi of the urethra are vesical or renal in origin. While sufficiently small to engage in the urethra they are too large to pass, and are arrested behind some natural or acquired strait in the passage. In a paper published in 1904 Englisch[3] collated the records of 400 such cases. Among these the sites of impaction were:

In the navicular fossa	...	11.2 per cent.
In the pendulous portion	...	14.5 ,,
In the scrotal portion	...	13.7 ,,
In the bulbous portion	...	18.6 ,,
In the membranous portion	...	42.0 ,,

No reference is made in the paper to calculi impacted in the prostatic urethra. That calculi do lodge in the prostatic urethra is well known, either in the bladder neck or where the prostatic joins the membranous portion.

It is a matter for surprise that the proportion of calculi recorded as lodged in the membranous urethra is so large when regard is had to the anatomy of this segment of the urethra. The membranous urethra is about half an inch in length, bounded above and below by the superior and inferior triangular ligaments; it is surrounded by an annular coat of unstriped muscle, and it is further supported by the fibres of the compressor urethrae. It is also a matter for surprise that Englisch should speak of the great distensibility of this portion, and explain on this ground the frequency of acquired urethral diverticula here. It is difficult to avoid the conclusion that many of these so-called membranous urethra diverticula are in reality diverticula of the prostatic urethra where it abuts on the superior triangular ligament, and that many of the calculi recorded as impacted in the membranous urethra have been, in fact, in the terminal part of the prostatic urethra. The prostatic urethra is the most dilatable portion of the channel, and once the superior triangular ligament is pierced the urethra is surrounded and supported by the muscular structures above referred to. A calculus or pouch behind the triangular ligament is of the prostatic and not of the membranous urethra. The term "membranous urethra" has not, in fact, been employed in so strict a sense by surgeons as by anatomists—even so precise a writer as Young speaks of opening the membranous urethra in the course of a dissection behind the triangular ligament.

Impacted calculi, having their origin in the urinary channels above, exhibit the varieties of structure of vesical and renal stones. They are comparatively frequently met with in children; out of 324 cases in Englisch's paper in which the age was known, 127 were under 15 years of age and 66 under 6 years of age.

In children the points of impaction are behind the natural straits of the urethra. In the adult acquired straits, that is, strictures, play the most important part in determining the site of arrest. If they remain in position they set up changes in their surroundings and also undergo changes themselves. Irritation of the urethral wall leads to ulceration, and the obstruction offered by the calculus to the stream of urine causes dilatation behind the site of impaction. The stone itself tends to increase in size by the deposit of phosphates upon its surfaces. Such secondary deposit is always phosphatic. The diagnosis and treatment of impacted urethral calculus are discussed in the textbooks and are well understood.

ENCYSTED CALCULI.

By encysted urethral calculi is here understood calculi which lie in pockets or diverticula communicating with the urethra. It is convenient to consider first diverticula of the anterior urethra in front of the superior triangular ligament (the urethra proper), and secondly, diverticula of the prostatic urethra, which is the representative of the primitive urogenital sinus.

Diverticula of the urethra proper are congenital or acquired. The congenital diverticula are due to imperfections and abnormalities in the union of the genital folds which bound the genital groove. Complete failure of union of these folds results in hypospadias; imperfect union may leave a pouch of greater or less extent, and the dermoids of the median ridge described by Timofeew[4] owe their origin to the same cause. Such congenital pouches are almost always found on the proximal side of the glandular portion, and from this point extend for a greater or lesser extent towards the scrotal fold. Acquired diverticula are more common, and arise from a variety of causes. They may be retention cysts of urethral glands or blood cysts which burst into the urethra. Other causes are strictures and operation scars, and a urethral fistula may end in the formation of a diverticulum. An impacted

calculus may form a pouch for itself by pressure ulceration of the urethral wall, and it may come to lie entirely outside the urethral channel; the pocket in which it lies is then an acquired diverticulum of the urethra.

The diverticula of the prostatic urethra are also either congenital or acquired. On the floor there is normally a median recess, the sinus pocularis, which represents the persistent lower common extremity of the ducts of Müller. In the adult it is a cul-de-sac which runs upwards and backwards for 6 to 12 mm.; its upper extremity lies behind and beneath that part of the prostate which underlies the urethral floor, and in some cases reaches to the posterior surface of the gland. Congenital abnormalities of the sinus pocularis are on record, and are referred to below. Possibly some of the congenital diverticula of the prostatic urethra are due to abnormalities of the urogenital sinus where it joins the urethra proper. Acquired diverticula occur in two situations—at the proximal and at the distal extremities. A certain number of those at the proximal end, near the bladder neck, are produced by prostatic calculi; these stones form pockets in the substance of the gland, which pockets tend to establish communications with the urethral channel. According to the observations of Englisch[5] and Vollemier,[6] cysts of the prostate underlying the urethra are responsible for another form of acquired diverticulum of the vesical end of the prostatic portion. Chronic abscesses of the prostate may also, by opening into the urethra, create a pocket in which a calculus might lodge or form. Diverticula of the distal end are produced by impacted calculi which lodge in the urethra on the vesical aspect of the triangular ligament, become embedded, and form pressure diverticula.

The composition of encysted stones has been relied on to decide the question of their origin, it having become an accepted doctrine that only phosphatic stones are formed *in situ*, and that urate, uric acid, and calcium oxalate stones found in diverticula must have come down the urethra from above. Tillmanns says stones formed in the urethra are "almost always phosphatic"; others are more dogmatic; Kaufmann, for example, stating that they are always so.

There is no obvious reason why calculi of other composition should not be formed in preformed diverticula, at any rate. Those described by Lieblein[7] were urate, and he considered them formed *in situ*, on account of the absence of symptoms pointing to their descent. Finsterer[8] recorded two cases: one of a large urate stone with a delicate coating of phosphate; another a mixed urate and oxalate stone with a small amount of phosphate; he considered both formed *in situ* in diverticula. In 100 cases of diverticulum stone collected in Englisch's paper whose composition was recorded, 22 were urate, 16 oxalate, 27 phosphate, and the remainder of mixed composition. Englisch, however, accepts the view that only the phosphatic stone is formed *in situ*, the others having come down from above. As far as I can ascertain, the doctrine is based on the *a priori* reasoning that urethral stones, including those in diverticula, are formed only as a result of local irritation and inflammation. Given a preformed diverticulum, however, and the urinary constitution which tends to the production of calculi, there does not appear to be any difficulty in the way of assuming that calculi other than the phosphate may form *in situ*.

Primary prostatic concretions may, as has already been stated, establish a communication with the urethra, the pocket in which they lie then forming acquired diverticula of the prostatic urethra. There is agreement amongst authors as to the constitution of these calculi; they are stated to consist of calcium phosphate and carbonate with a small proportion of organic matter.

The following three cases present examples of encysted calculi in diverticula which communicated with the floor of the prostatic urethra near the neck of the bladder.

CASE I.

E. S. H., aged 27, when first seen in 1908.

History.—A vague account was given of a blow in the perineum by a cricket ball in 1891, following which there was slight bleeding from the urethra for about a week. There was no history of venereal infection, and this may be accepted as correct. There were no further urinary symptoms until 1899, when he commenced to have some difficulty in passing urine. The cause of this difficulty was considered to be stricture, and from this time until 1908, when I first saw him, he had had instruments passed at intervals, and had also been instructed in passing them himself. In 1903 he became acutely ill with pain and tenderness in the left loin. He consulted a surgeon in London, who removed the left kidney; he was told that the organ was destroyed by tuberculosis. A sinus persisted in the loin for about three years, eventually closing after a series of injections of a suspension of iodoform.*

During all this time he had varying difficulty in urination, and instruments were passed at frequent intervals with a transient improvement in his symptoms. He never had an attack of renal colic, except just preceding the illness for which the left kidney was removed.

In August, 1908, he presented no signs of disease in any system except the urinary. The complaint was that of pain and difficulty in micturition. The urine contained a copious deposit of phosphates, was alkaline in reaction, contained no albumen and no pus. On examination I found a stricture immediately behind the bulbous portion admitting with difficulty a No. 8 English metal bougie. The passage of the bougie caused a great deal of spasm. I sent him to bed and tied in a No. 5 silk webbing catheter for twenty-four hours. This was not well tolerated; it caused a mild attack of urethritis and cystitis; the stream was, however, much improved. The improvement was only short, and, as further treatment by intermittent dilatation proved unsatisfactory, I advised external urethrotomy, and this was performed on April 16th, 1909. A stricture of moderate dimensions just behind the bulb was cut through. During convalescence from this operation he developed acute arthritis of the right hip-joint, an abscess formed on the pelvic aspect of the acetabulum, and was opened. The lesion gradually subsided, leaving an incomplete ankylosis of the joint. In the following July (1909) when passing a metal bougie along the urethra a grating sensation was felt just before entering the bladder. A radiograph was taken; this showed a fan-shaped shadow behind the symphysis pubis, and extending above and below this, apparently due to a collection of calculi. On rectal examination there was felt a collection of stones in the situation of the prostate which grated on palpation, the mass being about the size of a damson. On August 26th, 1909, the bladder was opened above the pubis, and on passing the finger into the internal meatus a diverticulum in the floor of the prostatic urethra was immediately met with, communicating with the urethra by an orifice which admitted the forefinger with difficulty. The diameter of the saccule was about two inches, and it was packed with calculi. They were removed with some difficulty by a spoon, and numbered thirty-three; twenty-seven are seen in the photograph (Fig. 1). All were faceted on one face or another, and most showed several facets; they were of a fawn colour and very hard. One of the largest was submitted to Professor Benjamin Moore for analysis, and his report was as follows:

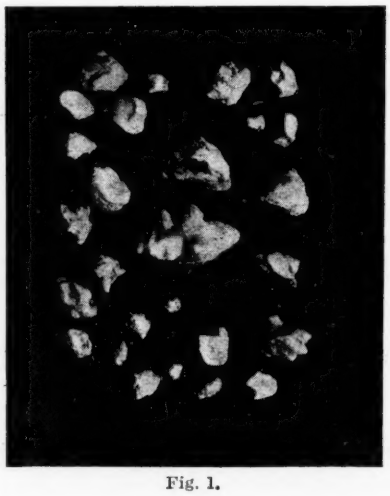

Fig. 1.

Calcium phosphate	61.5 per cent.
Calcium oxalate	30.8 ,,
Uric acid	3.9 ,,

The patient made a slow convalescence from this operation; the wound was not finally closed until after seven weeks. A calculus, which must have been dislodged into the urethra at the time of operation and overlooked, was subsequently removed.

The condition remained satisfactory for a period of eighteen months, the urinary stream was good, he had none of the previous pain and difficulty in micturition, and the general health was excellent. On March 5th, 1911, he had an attack of right renal colic while away in France and another attack a month later. There were several minor attacks following this, and on June 10th, 1911, he again came under observation. He was then seriously ill, and on examination I found the right, and only, kidney much enlarged and tender to palpation. A radiograph was taken by Dr. Thurstan Holland, and showed a collection of four calculi lying close together in the right ureter below the brim of the pelvis. It was obviously necessary to remove these without delay, and this was done on June 13th. Suppression of urine supervened, and he died on June 16th.

When this history is considered in the light of the later findings, it is clear that the long-continued difficulty and

* The nature of the renal disease and the reason for the persistence of the sinus were cleared up by the radiograph taken in July, 1909, which showed a calculus still present in the left ureter about the pelvic brim.

pain on micturition are to be ascribed to the presence of the encysted calculi, and that the stricture was of minor importance. The failure to relieve his symptoms by dilatation by myself and others points to this. The encysted calculi caused a condition of spasm which was responsible for the difficulty of micturition and the pain in micturition. Unfortunately I am unable to present an analysis of the calculi removed from the ureter owing to a laboratory misfortune. They were of a brown colour, rough surface, and the naked eye diagnosis was calcium oxalate. The absence of anything in the history pointing to the calculi in the urethral pouch having descended from above inclines to the belief that they were formed *in situ*. They filled the diverticulum and were packed together and faceted. The orifice of the diverticulum was comparatively small, and situated centrally in the floor of the urethra. They had in all probability been present in part for a period of ten years before the projection of one into the urethra revealed their presence, and during these ten years various surgeons had passed bougies along the urethra.

All these facts taken together appear to me to make it certain that they were formed *in situ*.

Their position in relation to the prostate inclines to the view that they were formed in the substance of the prostate itself. The sac as felt per rectum appeared to have replaced the prostate, and the radiograph shows them extending to right and left of the middle line beneath the neck and trigone of the bladder. On the other hand, their chemical composition raises a difficulty in adopting this view. Primary prostatic calculi are composed of calcium carbonate or calcium phosphate or a mixture of the two, there is no record of a prostatic calculus composed of 30 per cent. of calcium oxalate. On the whole it seems most in accordance with the facts to consider that the primary condition was the production of stones in the prostatic tissue underlying the urethra; these led to the formation of a cavity by pressure, which cavity communicated with the urethra at first indirectly through ducts and later directly. The further formation of concretions in the adjacent gland tissue and the increase in size of the original calculi led to a gradual growth of the diverticulum, and the calculi were built up in part from prostatic secretion and in part from the urine in the pouch. It is to be noted that the patient was a determined "stone maker" and that the calculi produced elsewhere were oxalate.

CASE II.

S. A., aged 48, as a boy and youth had been much troubled with incontinence of urine; this continued up to the age of 20. At the age of 18 he had an attack of gonorrhoea, from which he recovered in a few weeks under treatment. At 23 he first had some difficulty in passing water associated with pain. The attacks were occasional, and he noticed they were liable to occur after taking alcohol. He was treated by the passage of soft bougies "for a year or two" from the age of 25 onwards; he then had internal urethrotomy performed, which improved the difficulty in passing water, but the occasional pain in urination continued, especially when he first emptied his bladder in the morning. He had no further treatment until the age of 44, when he went to a hospital on account of increasing pain and difficulty in urination. He was then told that there were some stones about the neck of the bladder, but no operation was performed. In July, 1911, he passed a few small stones. I saw him, with Dr. Thomas Clarke, on August 17th, and operated the same day. A metal bougie, which was passed with some difficulty through the bulbous portion, came on calculi just before entering the bladder. The urethra was opened in the perineum, and a stricture of moderate dimensions was cut through at the bulb. The perineal wound was extended backwards, and a finger passed towards the bladder came on a diverticulum of the floor of a prostatic urethra containing calculi. The left forefinger in the rectum felt the collection of stones, and with the aid of this finger, and by means of a spoon passed through the urethral wound, they were removed. They numbered 86 (Fig. 2). The pouch was investigated with the right forefinger. The interior was rough; it measured approximately 2⅓ in. antero-posteriorly and 2 in. transversely, and extended backwards from its communication with the prostatic urethra behind the base of the bladder. There was no calculus in the bladder. A catheter was fixed in the bladder, and a rubber drainage tube also placed in the diverticulum. Three of the larger calculi were examined by Professor Benjamin Moore, who reported that the composition was as follows:

Calcium phosphate	... ...	94.3 per cent.
Uric acid	... ...	1.5 ,,
Calcium oxalate	... ...	2.3 ,,

When seen on October 8th, 1911, the wound had healed; he had no pain on passing water, and the stream was good. There was, however, a considerable degree of incontinence: between the periodic emptying of his bladder the urine dribbled. The explanation of this dribbling was not clear. However, on November 13th a metal sound was passed into the bladder and a calculus demonstrated. On taking a radiograph a large shadow appeared to occupy the base of the bladder, and to project into its neck. On November 15th the urethra was opened behind the triangular ligament; projecting into the internal meatus was a mass of calculus connected with a stone of very large dimensions in the bladder itself; it was of the consistence of moderately hard mortar; a lithotrite did not crack it, but pulped it. Some similar soft phosphatic material was adherent to the bladder wall here and there. In order to remove the whole of this it was necessary to make a suprapubic opening also. The diverticulum from which the calculi were removed at the previous operation was represented only by a shallow depression in the floor of the prostatic urethra; into this some of the soft phosphatic material projected. The formation of this phosphate was evidently due to a septic cystitis following the operation. Its position in the neck of the bladder was the apparent cause of the dribbling of the urine. At the second operation the bladder was of very small size, and was practically filled with the phosphate mass.

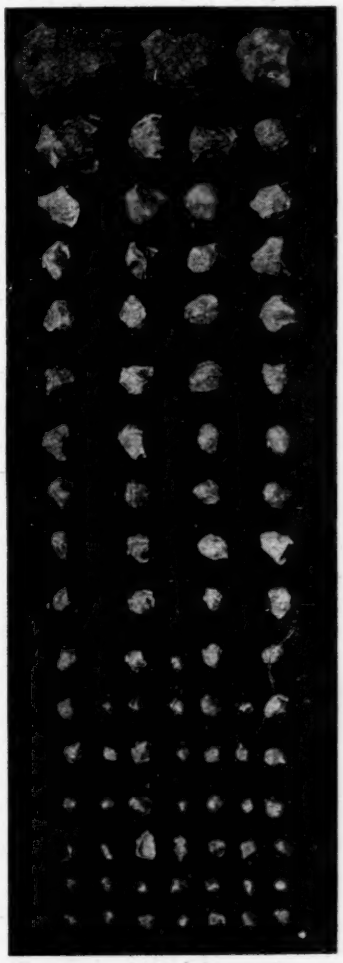

Fig. 2.

This history shows a striking resemblance to the first. The incontinence which troubled him right up to adolescence may have been due to some congenital structural abnormality about the neck of the bladder, but this can only be surmised; certainly involuntary micturition up to the age of 20 is a very uncommon condition. His pain and difficulty in micturition were ascribed solely to stricture for close on twenty years, and as internal urethrotomy was performed by a competent surgeon, it must be assumed that there was a stricture present. At the time of my operation there was a narrow strait at the bulb, but its dimensions were such that it could have had little influence on his symptoms. No doubt the greater part of his disability was due to the presence of the calculi, unsuspected for many years. Their position and relation to the prostate and chemical composition point to their having been formed primarily in the prostate. The small quantities of uric acid and calcium oxalate present were probably deposited *in situ* from the urine.

The necessity for dealing with the stricture as well as with the calculi influenced the character of the first operation undertaken. The urethra was opened in front of the triangular ligament, and the incision was extended backwards from this, in order to gain access to the pouch. No radiograph was taken of this case before the first operation, so that it is impossible to demonstrate the exact position of the calculi; the diverticulum was, however, central in position, underlying the urethra and neck of the bladder. Of the possible ways of explaining the formation of the calculi, the one which seems best to accord with the facts is that calcium phosphate calculi were first formed in the prostate, and that after the establishment of a communication with the urethra small quantities of uric acid and calcium oxalate were deposited from the urine. It is however, impossible to negative the presence of a preformed diverticulum as the first stage of the whole process

in view of the records of such preformed pouches in this part of the channel.

CASE III.

A. M., aged 42, patient of Dr. Finny, Ellesmere Port. In this case I had the advantage of a history drawn up by the surgeon under whose care he had been in India, of which the following is an abstract:

In September, 1900, the patient without warning began to suffer from frequent urgent calls to urinate, with pain during and after the act. On passing a sound it was arrested with a grating sensation a short distance in front of the triangular ligament. After returning home the same day he passed a stone consisting of several "hemp-seed" calculi, agglomerated together and separable from each other with great ease. On subsequent examination "only a small sound enters the bladder, and that with much pain"; his symptoms continued, but with less intensity. On December 4th, 1900, a stone was located in the urethra "close up at the back of the scrotum." The urethra was opened, but no stone was found there or elsewhere. On December 8th, however, a stone was removed by urethral forceps. At the end of January, 1901, he had a return of his old symptoms; on March 22nd, 1901, a small stone was located "½ in. in front of membranous portion of urethra," and removed with a scoop. His symptoms continued off and on, pain on micturition and frequency being constant, but it was not until August, 1902, that he had another acute attack. On August 9th, 1902, a stone was located, "apparently embedded in the prostate," but an attempt to remove it was unsuccessful. However, a further attempt with a scoop was successful on August 16th, and another minute stone was washed from the bladder. A week or two later he had very severe lumbar pain (renal colic); this recurred from time to time, and he also had a return of pain and difficulty in micturition.

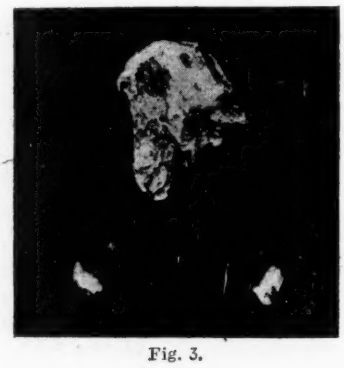

Fig. 3.

In 1904 he was under the care of a surgeon in London, who performed an external urethrotomy and stated that a stricture was present; he removed two minute spherical stones, which he stated were prostatic concretions. This operation did not relieve him, pain and difficulty in urination continued, and he also noticed that whenever he passed a constipated motion he had a sharp cutting sensation in the perineum.

When I examined him a large calculus was felt with the finger in the rectum in the situation of the prostate, grating was felt on moving it. A radiograph showed a large dense shadow to the right side of the middle line and two minute separate shadows close to its outer edge. Both kidneys and ureters were examined and showed nothing abnormal. No instrument was passed along the urethra.

Operation on October 27th, 1911.

An inverted V incision was made in front of the anus, the bulb exposed and the wound deepened by blunt dissection; the fibres of the external sphincter inserted into the central point of the perineum were cut, and the space between the rectum and the prostate was opened up. There was much old cicatricial tissue around the urethra behind the bulb. The prostatic urethra was opened behind the triangular ligament, and on inserting the finger the orifice of the pouch was immediately come upon. It was emptied of its three calculi without difficulty (Fig. 3), the opening was largely dilated, and a sharp spoon was freely used in the cavity. The interior of the pouch had a rough irregular wall. A rubber catheter was passed into the bladder and fixed by a catgut stitch through the margins of the urethral wound. The wound of the overlying parts was closed with deep and superficial sutures of catgut. The catheter was removed from the bladder on the fourth day; urine ceased to come from the perineal wound on the sixteenth day.

The chemical composition of the large calculus was reported by Professor Moore to be:

Calcium phosphate	... ...	60.91 per cent.
Calcium oxalate ...	... ...	13.36 ,,
Calcium carbonate	... ...	5.96 ,,

No uric acid.

This case differs from the other two in that soon after the onset of symptoms the true nature of his affection was discovered by the passage of a calculus. His first symptoms were evidently produced by the projection of a calculus out of the prostatic pouch into the urethra, and before this time there were no urinary symptoms of any kind. Subsequently other calculi, projecting and escaping into the urethra, were removed, but the pouch was not opened up and exposed. The calculi which I removed were situated well to the right of the middle line and firmly fixed. The large calculus presents a number of projections which suggest the irregularity of the bed in which it lay. On section it has an amorphous soft white centre, and around this are laid down concentric layers of a harder material of pale fawn colour, between the layers of which there is more of the softer whitish material. The position of this large calculus points to its having formed in the right lobe of the prostate. No prostatic tissue could be made out with a finger outside and another within the pouch—the gland appeared to have been destroyed by pressure. In this case I think there can be no doubt that the calculi were true prostatic calculi formed in the gland. There is nothing in the history which throws any light on the condition which led up to their formation.

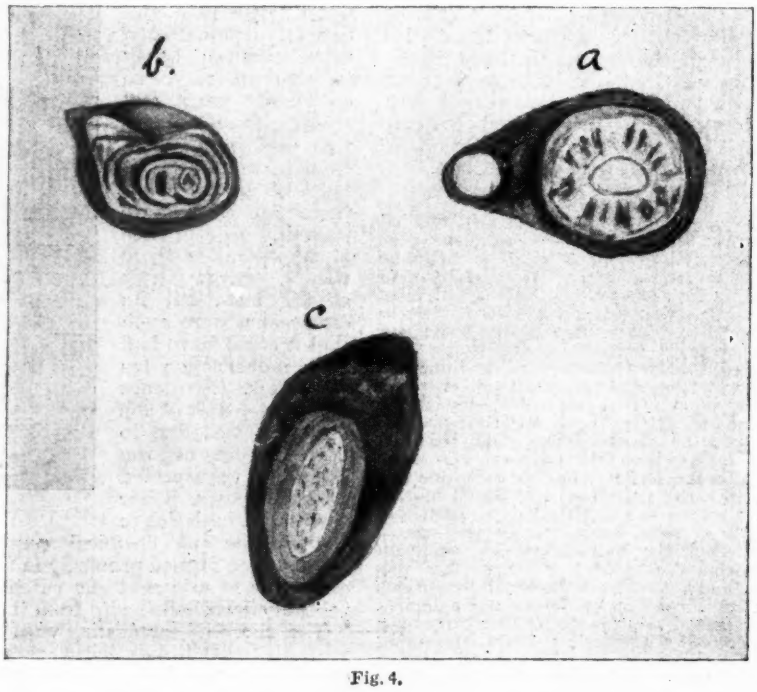

Fig. 4.

CHEMISTRY OF THE CALCULI.

It is necessary to say something on the composition of the calculi found.

CASE I.—The calculi were all of a fawn colour; practically all were faceted—some appeared to be compounded of several fused together. Chemically they consisted of two-thirds calcium phosphate, one-third calcium oxalate. On section they appear to the naked eye to be composed of two substances, the one of white and the other of a brown colour. (Fig. 4, *a*.) These have been laid down for the most part in layers, but there is a good deal of irregular deposit. The innermost part of each of the two calculi cut is composed of the whitish material. It is much less hard than the brown. Probably the white is calcium phosphate, the brown calcium oxalate. The arrangement in the calculi shows that during their growth both these substances were deposited in part intermittently, in part simultaneously, the initial deposit being phosphate.

CASE II.—The chemical analysis of the calculi in this case was somewhat of a surprise. Concentric layers are more definite than in the last case, a whitish and dark brown substance alternating, the white material being more friable (Fig. 4, *b*). The analysis gives the proportion of oxalate as being very small. The dark-coloured

material probably represents a mixture with some organic substance. The centre of one of the smallest seed calculi is composed of this, and is surrounded by the whitish phosphate. In this case the evidence points to the formation of the calculi in the prostate by the deposition of phosphate, a small proportion of oxalate being added from the urine, together with traces of uric acid.

CASE III.—In this case the large stone removed is composed of two substances—centrally a friable white substance, and peripherally a harder yellowish-brown substance (Fig. 4, *c*). The latter is laid down concentrically, the central part is amorphous. This is a calculus, primarily pure phosphate, on which oxalate has subsequently deposited, no doubt from the urine, after the formation of a definite communication between pouch and urethra.

In all three cases the clinical symptoms, the anatomy of the pouch in which the calculi lay, and the arrangement and number of the calculi, point to their having formed *in situ* primarily in the prostate gland, eventually in pockets communicating with the urethra. The chemical analyses make it necessary to revise the statements in the textbooks as to the composition of urethral calculi formed *in situ*. Evidently, the presence of calcium oxalate in a calculus cannot be accepted as evidence that it had descended from the urinary channel above.

ANATOMY OF THE DIVERTICULA.

In all three cases the pouches in which the calculi lay appear to belong to the acquired diverticula, whose formation is secondary to that of the calculi themselves, and directly due to their presence. This is the most common origin of pouches in the prostatic urethra according to the cases on record, although there are cases in which it is impossible to avoid the assumption of a preformed diverticulum antedating the formation of the contained calculi, in particular a diverticulum resulting from cyst formation in the gland.

Englisch[9] describes a preparation derived from a man aged 40. A cyst was present immediately under the mucous membrane of the posterior wall of the prostatic urethra. It was lined by a many layered flat epithelium, and presented numerous depressions and pockets corresponding to dilated prostatic ducts and acini. The contents consisted of an albumen-like fluid, containing epithelial masses, cells, and prostatic concretions. The same author also describes specimens which show that abnormalities in size of the sinus pocularis are met with, and that it may attain considerable dimensions. He quotes the following cases recorded by Burkhardt:

A man aged 59, who in life had had no urinary symptoms, presented a fluctuating cyst underlying the internal urethral meatus to the right of the middle line.

A man aged 51. Six months previously sudden dysuria and retention for two days. Return of the same symptoms two weeks before record. With the cystoscope close to the bladder neck was seen a greyish-red translucent swelling the size of a nut. Removal by suprapubic incision. The cyst was single, and showed the characteristics of a prostatic retention cyst.

A third case concerned a man of 22, dead from tuberculosis. Behind the posterior border of the inner meatus there was present a small soft swelling: a sound in the sinus pocularis led into this tumour, and it was, in fact, a dilatation of this channel.

Michailow[10] has recorded a retention cyst of the sinus pocularis causing urinary obstruction. Large diverticula connected with the prostatic urethra have been placed on record by Escat, Thistle, Ferraton, and Kapsammer.

Escat[11] found and removed by perineal dissection a congenital diverticulum from a youth aged 18. This presented in the perineum behind the scrotum, and was traced to an opening in the pars prostatica. It was considered by Escat a dilatation of the Müllerian ducts. It contained no calculi. The same author described the case of a man of 31 with congenital inversion of the penis, congenital and acquired urethral strictures, and a diverticulum in the pars prostatica which gave rise to great difficulty in catherization. In Thistle's[12] case a fluctuating swelling presented in the perineum; this was a urethral pouch extending backwards behind the neck of the bladder—it contained three uric acid stones.

Ferraton[13] recorded a "voluminous calculus of the urethra enclosed in a juxta-vesical pouch, a small prostatic pseudo-bladder." The patient was aged 24. At the age of 4 he had pain on micturition, and ever since a slight discomfort had persisted. For five years before admission the urinary symptoms had been more pronounced. Radiography showed a circular shadow behind the pubis. The bladder was opened above; the forefinger, introduced into the internal meatus, came at once on a cavity opening out of the floor of the urethra containing a calculus, the cavity being considerably larger than the contained calculus. Analysis showed a centre of urate surrounded by phosphate of lime. Ferraton considered the cavity pre-existing.

Kapsammer[14] has related the removal of a stone the size of a goose's egg from "a vaginal sac" in a male. The patient was aged 29; from youth he had passed blood by the urethra occasionally. At the age of 26 a fluctuating swelling was found between the perineum and prostate which could be emptied into the urethra by pressure. Three years later the stone was removed by perineal incision, and at a second operation the sac was extirpated. The sac had all the appearance of a vagina, communicated with the pars prostatica, and its wall had the structure of epidermis except for glands and follicles. It was surrounded by a layer of unstriped muscle.

These cases illustrate the manner in which preformed saccules of the prostatic urethra may arise. The writer is not aware of any record of a saccule whose origin was definitely traceable to the bursting of a prostatic cyst into the urethra, and such a sequence of events is not likely to be capable of demonstration; but the fact that such cysts do occur, and the likelihood of their establishing a communication with the urethra, make it probable that some of the prostatic urethral pouches arise in this way. The large pouches described by Escat, Ferraton, Thistle, and Kapsammer probably owed their origin to an abnormal development in connexion with the urogenital sinus and its junction with the urethra, or, as Ferraton supposed, to a dilatation of the sinus pocularis.

The following two cases of diverticula, although described as of the membranous urethra, may be noted as illustrating the lodgement of urinary calculi in preformed diverticula.

Finsterer,[15] in an article on urethral stones, relates a case of diverticulum of the membranous urethra. The patient was aged 35, and a calculus was easily palpable on rectal examination above the sphincter ani. Extraction was difficult owing to its firm enclosure in the pouch, which resembled a forebladder (Vorblase). The stone was compound, four articulating with one another; around a small porous nucleus of ammonium urate phosphate was deposited in concentric layers. From the description given it seems very doubtful whether the diverticulum was actually of the membranous urethra.

Schapiro[16] writes of a man, aged 37, from whom he had removed a urate calculus, weighing 5.8 grains, from a congenital diverticulum of the membranous urethra. He considered the diverticulum congenital because no pathological cause for its development could be discovered.

The pouches which form in the prostate around a primary prostatic calculus are more frequently met with than the congenital type, but they are not common.

Young[17] states that he has met with eleven cases of prostatic calculi, in eight of which they were embedded in prostatic tissue, and removed with enlarged prostates. In one case a calculus was removed from the left lobe of the prostate of a child. In another, a patient aged 36, three calculi almost completely filled the prostatic capsule; the third was a case of multiple seed calculi in a *post-mortem* specimen.

Morton[18] has described three cases:

1. A patient aged 35; difficulty in micturition for fifteen years; a pouch present in the prostatic urethra in which there were seven calculi and three minute concretions. One stone was also present in the bulbous urethra and one in the bladder. All were phosphatic. There was a stricture of the scrotal urethra. Later several stones were found in an extension of the pouch backwards under the bladder.

2. A patient aged 34. History of urinary retention when a boy. From this time suffered from incontinence. Nine months before admission had retention, and a month later two stones were removed from the scrotal part of the urethra. On examination stones were felt per rectum grating upon each other, and were removed from the "dilated" prostatic urethra.

3. A patient aged 63. External urethrotomy many years before. Stricture. Stones were felt by sound in prostatic urethra and palpable per rectum. Fragments of stone were removed from a "greatly dilated prostatic portion," partly composed of

calcium oxalate; the prostate seemed to have disappeared, the floor of the pouch being apparently formed of the urethral and rectal walls only.

Morton remarks that in none of the cases was the stricture just in front of the prostatic urethra nor was it so tight as one would expect it to be if it had been the cause of the marked dilatation. He says "as far as I know only phosphatic stones are formed in the urethra."

Fenwick[19] has related the case of a man of 28 years, who had had urinary symptoms for five years. The prostate per rectum felt a mere capsular shell spread over a bag of stones. The stones were five in number and one projected into the prostatic urethra.

De Keersmaecher[20] writes of two cases. A man of 69 years gave a history of fifteen to twenty years' pain in urination. The bladder was opened above the pubis, and immediately within the internal meatus a pouch was found containing calculi. A man, aged 27, had had internal urethrotomy several years before without improvement. A metal bougie felt a stone in the deep urethra. The bladder was opened above the pubis and the finger in the internal urethral opening came on a pouch containing three stones.

DIAGNOSIS.

Encysted calculus of the prostatic urethra is a condition which, though rare, is met with from time to time and gives rise to symptoms of a characteristic kind. There is pain and difficulty in urination, the stream varies greatly without any obvious reason. The passage of an instrument gives rise to an extraordinary muscular spasm which simulates a true stricture. The passage of bougies, however, affects the stream but little and the improvement in urination is very transient.

Unless a rectal examination is made or a calculus projects into the urethra, the true cause of these symptoms will probably remain long unsuspected and the patient be treated for stricture. In two of the cases recorded here a stricture masked the chief cause of the symptoms for many years, in the third the escape of a stone into the urethra revealed the state of affairs at an early stage. These calculi are evidently liable to be formed at a comparatively early age, and in young adults who present the symptoms of difficult and painful micturition, if the urethral examination does not satisfactorily account for these symptoms, it will be well to bear in mind the possibility of such a condition as described here.

A point to note also is the intolerance of instrumentation which these patients present; the passage of an instrument along the urethra gave rise to great pain in each case when the posterior urethra was reached. In Cases I and III a catheter was fixed in the urethra while stones were still present, and in each case a urethritis was set up.

These calculi are felt at once on rectal examination, the prostate is more or less replaced by a mass of intense hardness, and when there are several stones present there is grating on palpation.

The passage of an instrument is attended by certain characteristic symptoms—the muscles of the membranous urethra are on guard and the instrument meets with difficulty here owing to their spasm; just before entering the bladder there is complaint of great pain. Of course if the bougie finds a grating surface in the posterior urethra the diagnosis is plain—at any rate, it is clear that a calculus is there.

TREATMENT.

The old methods of removing encysted calculi such as these by means of scoops and forceps when they project or escape into the urethra do not furnish a proper remedy for the condition. It is absolutely necessary that free access should be obtained to the pouch. Calculi are extremely likely to be overlooked unless the pouch is dealt with in the most thorough manner possible, and for this reason also the suprapubic route is inferior to the perineal. I do not think that calculi can be searched for in outlying pockets, as they must be, by the suprapubic route.

The procedure adopted in the third case offers the best means of dealing with the pouch thoroughly. The most obvious suggestion is the total removal of prostate, pouch, and calculi. In the class of case illustrated by these three histories I do not consider the suggestion feasible. The enucleation of a hypertrophied prostate is one thing, the removal of a mass consisting of remains of prostatic tissue with calculi together with prostatic sheath is quite another, and anatomically impossible, and unless the prostatic sheath were removed with the scissors the wall of the pouch in such cases would not be taken away.

The best method is to open the prostatic urethra behind the triangular ligament. The operation is begun as for a perineal prostatectomy. After freeing and retracting the rectum, the distal part of the prostatic urethra is exposed and opened on a staff. The incision will be within 1 in. to 1½ in. of the pouch, and the finger is thrust into it. The opening into the pouch is forcibly stretched. The calculi are then removed with a spoon or with forceps, the forefinger of the left hand outside the pouch being used as an aid. The most careful exploration is necessary to avoid leaving small calculi behind, and it is necessary to use the spoon vigorously within the cavity, and frequently to explore with the finger.

The second operation in Case II gave an opportunity of examining what was a pouch of considerable size three months previously; all that was present was a shallow depression in the urethral floor. If therefore the pouch is thoroughly cleared and curetted, it may be expected to practically obliterate itself, provided that the pouch is freely thrown open into the urethra by forcible dilatation of the aperture of communication.

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A CASE OF CALCULI OF THE PROSTATIC URETHRA.

BY

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IMPACTION of calculi in the urethra is an occurrence more frequent in children than in adults, the usual place to find them being the fossa navicularis, because the meatus is the narrowest part of the urethra. Such impaction is probably the most frequent cause of retention of urine in children, but usually the urethra is not completely blocked and the urine dribbles away.

In adults a calculus may lodge behind a stricture, cause ulceration and perineal abscess, which bursts and establishes a fistula, through which sometimes the stone escapes.

Prostatic calculi may be divided into two classes:

1. Calculi which lodge in the posterior urethra, escaping from the kidney, bladder, or seminal vesicles; and a small group of cases in which the stone is primarily formed in the posterior urethra.

2. Calculi formed in the substance of the prostate gland—the true prostatic calculi—entirely distinct in origin and nature from urinary calculi.

I report the following case as being of interest, owing to the comparatively large size of the stones and their perfect adaptation to the prostatic urethra; also because I believe the cases to belong to the somewhat rare class in which the stones are formed primarily in the prostatic urethra.

CASE.

P., a highly neurotic Cingalese, aged 20, was admitted into the General Hospital complaining of the following symptoms: Frequency of micturition (about ten times during the day and about fifteen times at night, giving him little sleep). Micturition was accompanied by a burning sensation, especially towards the end of the act, when he experienced a scraping sensation, beginning at the anus and ending at the meatus. In spite of severe straining the stream was thin and weak, and the last few drops contained a thick white precipitate—phosphates. Micturition was most easily accomplished when he lay on his side, but was almost impossible when standing, owing to sudden blockage and interruption of flow. This effect was no doubt contributed to by the loose stone I subsequently

found in his bladder. During the day, therefore, he found it easier to micturate sitting on his haunches (a method much in vogue amongst the natives here). Micturition under the best of circumstances was torture. I saw him lying on his side straining prodigiously, groaning in agony, and pressing with his fingers forcibly on the perineum, and the result of all was a thin feeble stream of urine rapidly passing into a few drops, which soon ceased.

There was dribbling in the intervals of micturition, but the bladder was not distended. He sometimes felt a small foreign body move in the fossa navicularis (referred sensation). He never passed blood or stones per urethram, but has often noticed white pieces like "cocoanut scrapings" in his urine—no genital symptoms. This state of things had been going on for ten months.

The patient had undergone twelve months' imprisonment in a Ceylon gaol, from which he was released only three months ago. In gaol he had done hard labour on a diet of rice, coffee, dry fish, and hard bread, and meat. After one month's imprisonment he received lashes. He had hardly been three months in gaol when he noticed the first symptom of his disease, namely, frequency of micturition.

On making a rectal examination, which I had to do under anaesthesia, owing to the severity of pain, I felt the grating of two stones lodged in the region of the prostate, and confirmed this on passing a sound, when I also detected another stone lying loose in the bladder. Prostatitis and deferentitis were present.

Operation.

I performed suprapubic cystotomy and removed three stones—one from the bladder 3.2 cm. long, and two from the prostatic urethra, 2 cm. and 1.4 cm. in their longest diameters respectively. I found the bladder wall very attenuated. The prostatic stones I reached by passing my finger through the internal meatus, and extracted them with scoop and finger, aided by a finger in the rectum, without very much difficulty. They were situated about ½ in. from the neck of the bladder; the semilunar stone was removed first. These stones were faceted for articulation with each other, and, as will be seen from the diagrams, are not unlike the scaphoid and semilunar bones of the carpus. The stones were composed of phosphate and calcium carbonate.

Stones in prostatic urethra. (Actual size: A, 1.4 cm.; B, 2 cm. by 1.5 cm.)

I did not keep in a rubber catheter at the time, and regretted it afterwards, as I was only able to do so after dilating the urethra with sounds a couple of days later. I corrected his phosphaturia with urotropin, acid sodium phosphate, and a bitter infusion.

In three weeks the patient left hospital with no unpleasant symptoms and quite cheerful.

Certain points in the case call for remark.

Casper favours the pre-rectal route in the extraction of prostatic stones; I think I was well advised in having adopted the suprapubic approach in this case.

Judging from the contour of the two prostatic stones, their accurate adaptation, and the presence of phosphaturia, I think the conclusion that these stones were formed primarily in the prostatic urethra justifiable. I am inclined to believe that the narrow portion of the bigger stone projected into the membranous urethra, the narrowest portion of the passage; it is significant that this constricted part measures 1.2 cm., the length of the membranous urethra.

The overwork, anxiety, intimidation, and bad food inseparable from the life of a convict seem to have been the causative factors in the production of the phosphaturia and calculi. At any rate, the symptoms began only three months after he went into prison.

Pressure on the perineum was an aid to micturition, serving probably to cause a slight dislodgement of the calculi. The feeling of a foreign body in the fossa navicularis was a referred sensation. Difficulty of micturition when standing was an effect of the action of gravity on the prostatic stones, whilst the sudden blockage to the urinary flow must be attributed to the vesical stone.

Dribbling in the intervals of micturition is attributable to the inability of the prostatic sphincters and the compressor urethrae to act, the latter probably owing to the intrusion of the narrow neck of the lower stone within the membranous urethra. In other words, there was mechanical incontinence of urine.

AN UNUSUAL URINARY DEPOSIT OF CALCIUM CARBONATE.

By W. HERBERT BROWN, M.D.,
ASSISTANT DISPENSARY PHYSICIAN, ROYAL INFIRMARY, GLASGOW.

A DEPOSIT of calcium carbonate in human urine is of such rare occurrence that I regard this a sufficient reason for bringing the following case before the notice of the profession.

The patient, a man aged 65, was presumably suffering from granular kidney. He had been feeling in excellent

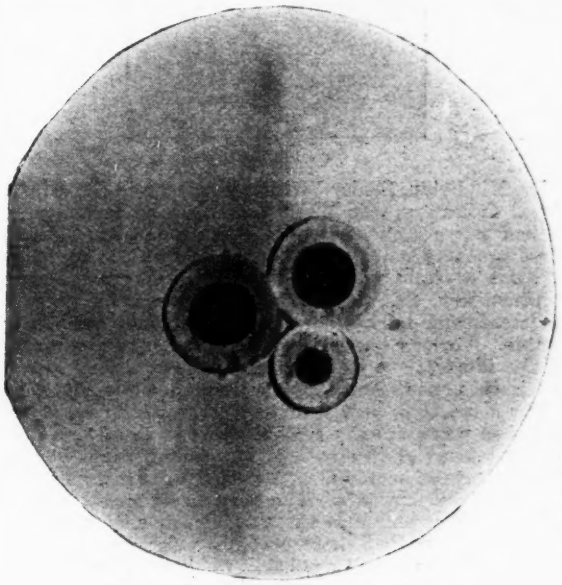


Fig. 1.—Calcium carbonate; high power.

health till this, the first and terminal illness since boyhood. The symptoms began with headache, followed later by sickness and vomiting; he got progressively worse, gradually passed into a comatose state, and died three

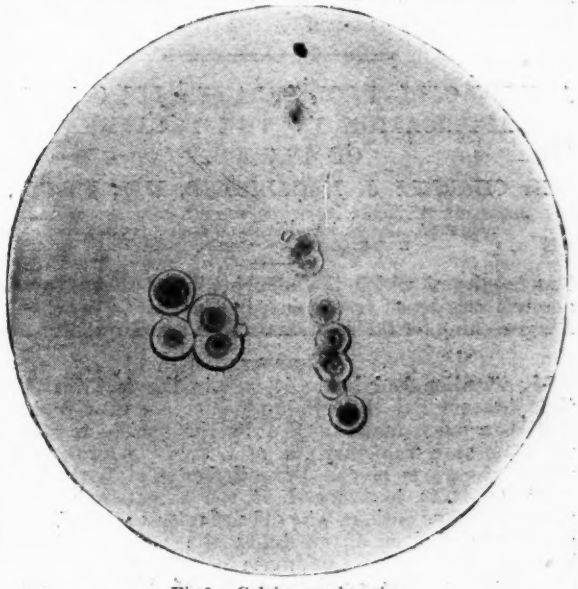


Fig. 2.—Calcium carbonate.

weeks after the onset of symptoms. The arterial tension was noted to be high. At no time did the urine contain more than a very small quantity of albumen. The first specimen, examined during the first week of illness, showed

an organic deposit containing a number of granular and hyaline casts, but no crystals of any kind. A second sample, examined two days later, showed no deposit, and no tube casts were found in this or any of the samples thereafter. During the second week of illness the urine became more highly coloured and muddy, and looked simply like a concentrated urine with a deposit of pale urates. Microscopical examination, however, revealed a very large number of crystals, as shown in Figs. 1 and 2. They had a beautifully clear and sharply defined appearance, consisting of a double contoured envelope and a finely striated structure centrally.

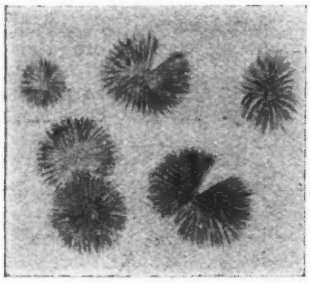


Fig. 3.

Dr. Middleton, Senior Visiting Physician to the Glasgow Royal Infirmary, who kindly examined the specimen, said he had never seen such a urinary deposit, but thought it most probably calcium carbonate, though the appearance of some crystals suggested leucin. Mr. Agnew, Lecturer in Chemistry, St. Mungo's College, examined some of the sediment, and reported that it consisted of calcium carbonate. Various books were consulted, and though some of the illustrations of lime crystals were a little like this specimen, none presented the picture shown in Fig. 1.

For some days this sediment continued to be present, and then was gradually replaced by one consisting chiefly of crystals as shown in Fig. 3. Among these, however, were always to be found a few circular ones, and also a few uric acid crystals. The very finely striated appearance in this second form was very clearly shown, and gave the impression that these crystals were simply the first form minus the double contour. They were clearly of the same chemical composition, possibly in a different phase of formation. Of this interesting and unusual deposit I offer no explanation.

The patient's diet latterly consisted of nothing but milk, and the only drugs he had during his illness were the alkalis, a few doses of erythrol-tetranitrite, and hypodermic injections of pilocarpine, and these latter I do not think offer an explanation.

A NEW CELL PROLIFERANT: ITS CLINICAL APPLICATION IN THE TREATMENT OF ULCERS.

BY CHARLES J. MACALISTER, M.D., F.R.C.P.,

HONORARY PHYSICIAN TO THE LIVERPOOL ROYAL SOUTHERN HOSPITAL, AND TO THE ROYAL LIVERPOOL COUNTRY HOSPITAL FOR CHILDREN, ETC.

THE inquiry of which the following is a short preliminary account originated in a somewhat accidental way when I was seeking for information concerning cell proliferants.

COMFREY.

My attention had been directed to the fact that from time immemorial the symphytum, or common comfrey, had been much recommended by the ancient writers in medicine as a vulnerary and as a dressing for sores and ulcers of various kinds. From the days of Saxon leechdom* (*c.* 1000) to the end of the seventeenth century there were few authors who did not refer to it, and it was sometimes spoken of as being the "chief vulnerary herbal." I can find no reference to comfrey in any books on materia medica or therapeutics of relatively recent date; Pereira, for instance, does not refer to it, and it was never an official remedy so far as I can discover. To this day, however, it has a traditional reputation among country folk, both in England and in Ireland, as a domestic herbaceous "simple" for applying to sores, and I was much interested during the past summer, when visiting a farm at Tarvin in Cheshire, to find that its owner always keeps a bed of comfrey growing in order that he may provide the villagers with it when occasion arises.

I was a good deal impressed by the old accounts of this ancient remedy, and in particular with the description of one case, which led me to think that it might be quite worth while to investigate the qualities of comfrey and to discover whether it, or any of its constituent principles, had any influence upon cell growth; and as a result of researches carried out in collaboration with Dr. Titherley and Mr. Coppin, of the Chemical Department of the University of Liverpool, I shall presently show that it contains a body which may have some important clinical applications.

Through the kindness of Professor Harvey Gibson I was provided with a large quantity of the root, some of which was handed over to Dr. Titherley and Mr. Coppin, and while they were making a careful chemical analysis of it, which took a considerable time, I proceeded to dress the only ulcer which was then available to me with a strong infusion made from the powdered root. This case was an exceedingly unpromising one, because it was a "rodent" of about two years' duration, not a simple ulcer. It was a stroke of good fortune, however, that this case was the first to be experimented upon, because having resisted all kinds of previous treatment, the marked epithelial growth which took place upon it seemed more likely to be the result of a specific action of the application than would have been the case in an ordinary varicose ulcer for instance. It was a very large ulcer (measuring 4 in. by 3 in.), involving the skin and deeper structures over the upper thorax, and it was slowly spreading, more especially by its upper margin, which was high and undermined; the other margins were less raised. The base was irregular, and there was some sero-purulent discharge. After being dressed with the mucilaginous infusion for about a week the surface cleaned, and a distinct growth of epithelium could be seen taking place from some of the marginal points. Later on the upper margin flattened somewhat on its inner aspect, the undermining vanished, and after growing here and breaking down there for a time the epithelium became stronger and closed in to a considerable extent.

By this time Dr. Titherley reported to me that he had obtained a definite, so far unidentified, crystalline body from the root, and he was able to give me sufficient to experiment with. Since it was very sparingly soluble in water, quite a large amount of solution was made, which was now used as a dressing for the ulcer instead of the infusion. With this application the skinning-over process in the course of a month was all but completed.

I do not propose at this point to proceed with clinical results. Several other experiments were made, however, all of them confirming the suggestion that the symphytum root contained a principle which might be useful as a cell proliferant. It therefore behoved us to investigate its chemistry before studying its practical utility.

In his preliminary examination Dr. Titherley established the facts that the root contained:

1. Gums.
2. Sugars, including a reducing sugar.
3. Resins.
4. A protocatechuic derivative or derivatives.
5. A substance giving an intense yellow solution with sodium hydrate (not investigated further).
6. A crystalline solid, very rich in nitrogen and melting at 226° C.

Since from clinical observations this latter body appeared to be the physiologically active constituent of the root, Mr. Coppin was asked to devote his attention to its investigation. His methods of extracting it will be fully published at a later date; but Dr. Titherley and he found that the root contained about 0.8 per cent. of it, and by estimating its carbon, hydrogen, and nitrogen contents he showed that it possessed the same empirical formula as allantoin, which it greatly resembled in its chemical properties.

ALLANTOIN.

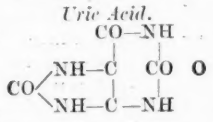
Some allantoin was now prepared from uric acid, and the product from the root was proved conclusively to be an identical substance by chemical methods. For example,

* Dr. Edward E. Nicholson (Neuilly) furnished references.

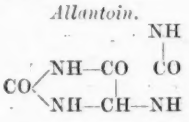
allantoic acid and other derivatives were prepared both from the chemically made allantoin and from that obtained from the root; their melting points were the same, and so forth.

Allantoin ($C_4H_6N_4O_3$) is a compound which is obtained by the alkaline oxidation of uric acid in the cold.

Uric Acid.



Allantoin.



It is a pure white crystalline substance, melting at about 226° C., with decomposition. It is only slightly soluble in cold water (0.6 per cent.), but readily in hot water. It is rather more soluble in cold alcohol, but it is quite insoluble in ether. Dry allantoin is quite stable, but if boiled with water for a considerable time it undoubtedly undergoes decomposition to a slight extent. It is decomposed by alkali, giving a variety of products, the nature of which entirely depends upon the conditions under which the experiment is carried out. For instance, concentrated potassium hydrate in the cold gives allantoic acid, whereas boiling with dilute sodium hydrate for half an hour and then acidifying with nitric acid gives urea nitrate. Allantoin is to a certain extent an amphoteric substance—that is, it is capable of combining with both acids and bases.

A potassium salt of allantoin is $C_4H_5N_4O_3K$.
A salt of nitric acid is $C_4H_6N_4O_3HNO_3$.

Regarding the chemical physiology of allantoin or the part which it plays in human metabolism very little is known, but some interesting facts have been recorded which may throw light upon its action as a cell proliferant and may point to its having a function to perform in the bodily chemistry, apart from any possibility of its being a product of purin metabolism, in which light it has generally been regarded. It is present both in animals and plants. It was first discovered in the former, and received its name from the fact that it was found in the fetal allantoic fluid. Later on it was identified in the urine of pregnant women. Recently its presence has been demonstrated in very small amounts as a normal constituent of the urines of healthy people, but that it is not an end product of human metabolism, which means that it is probably not derived from the oxidation of uric acid to which it is closely allied, has been shown by a good many observers, as pointed out by Dr. Ackroyd in a paper published in the *Bio-Chemical Journal* for March, 1911. This is an important observation, and is based upon the works[1] of Schittenhelm, Wiener, Minkowski, Poduschka, and Wieschowski, who have shown that when allantoin is given to man it can be recovered to a considerable extent in the urine, and the author himself concludes "that the whole quantity of allantoin excreted by man on a milk and vegetable diet may be derived directly from that contained in the food." It will be noted that I am speaking of the relation of allantoin to human metabolism only. In the dog, cat, and rabbit, on the other hand, it appears to be a normal end product of metabolism.

If these facts are reliable the allantoin in human urine is mainly derived from vegetable foods, as pointed out by Dr. Ackroyd, and in the healthy individual it appears to pass practically unchanged through the economy, the amount eliminated representing about the amount which had been ingested.

Distribution of Allantoin in the Vegetable Kingdom.

Our knowledge of this is not very extensive, but it is a very suggestive and interesting fact that such analyses as have been made indicate that it is generally found in parts which are related to growth either active or potential. For instance, in 1881–82 Schultz and J. Barberi found it in the buds of certain plants and in the bark of branches of trees, and Ackroyd refers to its identification in the embryos of wheat separated in the process of milling, and in beet juice by Richardson and Crampton (1886); he has himself demonstrated its presence in bread, French beans, and green peas, whereas it is absent from bananas and rhubarb. Now this is a suggestive circumstance taken in conjunction with the fact that it is a characteristic component of the fetal allantoic secretion, and related therefore to an important structure connected with the fetal circulation, a structure along which the vessels pass which convey the fetal blood to and from its intimate relationship with the maternal blood.

Whenever we find any substances constantly in certain parts of plants or animals it is quite reasonable to suppose that they may be in some way related to and necessary for the particular tissues which have selected them, and although the allantoin in the human embryo might be regarded as a fetal waste product, I think we may feel justified in assuming that, in the economics of Nature, it has a function to perform, perhaps in relation to cell multiplication, especially as it is not at once eliminated through the maternal circulation. The same suggestion is raised by the fact that it is also present in milk, the food of the rapidly growing young organism, and in the parts of some plants in which active cell multiplication takes place. We are making some investigations concerning these matters, and later on this preliminary communication will, I hope, be augmented by a description of the results of that work.

Having thus referred to the history of events which led up to this inquiry concerning comfrey root and the discovery of its comparative richness in allantoin, I must proceed to say a few words concerning its effects upon the cases which have been treated with it.

Clinical Observations with Allantoin.

In making clinical experiments great care has to be exercised in the selection of cases, in order to make certain that other conditions which would ordinarily promote healing are not alone operating and bringing about or starting the cell proliferation. On this account I have tried to safeguard my observations in the first place by treating those ulcers which have refused to heal under ordinary forms of rest and cleanliness and under ordinary forms of treatment, and in the second place I have provided a good many medical men with solutions of allantoin to treat their cases with, in order that my own results might be confirmed or tempered by theirs. One is rather apt, when experimenting with a substance in this way, to allow optimism to exaggerate the resultant benefits, and it is an advantage to get others to form independent judgements concerning them from their own observation.

I shall begin by shortly relating a few of the numerous cases where, under my own care, several long-standing ulcerations were the subject of investigation. One of the most striking cases was the following:

A woman, aged 48, who was transferred to me by Mr. Douglas Crawford on July 20th, 1911. There was a large ulcer on the dorsum of the foot and another, practically continuous with it, over the lower third of the leg. The bases were in places sloughy and even gangreous looking, and there was a purulent discharge. She was sent to Mr. Crawford, I understand, for his opinion as to whether the leg should be amputated. The ulcer measured 5 in. by 4 in., and had been in existence for five years. Allantoin dressings were commenced on July 25th; a week later the surface had cleaned and presented healthy granulations, and a rapid growth of epithelium was taking place from all the margins. On August 12th it was manifestly healing, and on August 17th, that is, in thirty-three days, this huge ulcer was reduced to the size of a pin's head. The scar was healthy and sound. She was kept in bed for a fortnight, and since her discharge has remained sound and well.

Another class of ulcer which has quickly responded to allantoin includes those which are apt to occur in paralytic cases.

We had an example of this in a girl aged 11 years, who had a large ulcer on the dorsum of her left foot. The skin had broken down rapidly, leaving a large, deep, circular ulcer about the size of a penny. Since it showed no signs of healing at the end of five weeks, Mr. Robert Jones invited me to dress it with allantoin. This treatment was commenced on March 10th. The epithelium rapidly grew in, and in four weeks it was entirely healed.

Another case analogous to this was that of a young woman, also a patient of Mr. Jones, who had circular paralytic ulcers on each leg. They were examples of what used to be called weak ulcers in my student days, and they had remained practically unchanged, one of them for five months and the other for eight months, in spite of the fact that the patient had been recumbent for several weeks. On May 2nd they were dressed with allantoin, and on May 17th the ulcer on the right leg was skinned over. The one on the left leg took longer, but it was healed on June 8th. The epithelial coverings in this case were thin and the cicatrices soft and flat. She was one of those patients with flail legs, the surface cold and the muscles atonic, and one was not surprised to hear that one of the ulcers subsequently recurred.

I might quote many cases of various kinds which have been treated under my own observation, such as chronic varicose ulcers, burns, etc., all of which have exhibited increased growth of epithelium and hastened healing processes, but there are others to which I attach almost more importance because they have not been under my own immediate care.

Dr. Arthur Wallace records a case of an abdominal hysterectomy for fibroids; during the course of the operation gall stones were discovered, which were removed, and the gall bladder was drained. A fistula persisted for a month without any indications of closing. A light gauze wick saturated with allantoin solution was introduced twice daily into the fistula. From that time the track steadily narrowed, and ten days after the first application bile ceased to escape and the sinus healed up steadily.

Dr. Wallace also reports a case of abdominal hysterectomy for carcinoma of the cervic uteri, with pelvic dissection. On the day following operation an irregular area of skin on the right buttock was noted to be hyperaemic. The margins were sharply defined. On pressing against it sensation was found to be diminished, and the pressure was followed by temporary local anaemia. Such areas have been previously noted after this operation. Usually they disappear in a few days, but in a few cases necrosis of the skin has occurred, and this happened in this case. Experience of such ulcers in other cases has shown that they are long in healing, many weeks being required for the process.

September 21st. Ulcer measured 2½ in. by 1 in. Dressing with allantoin solution was begun.

September 28th. A rapid growth of epithelium has occurred during the week, and the ulcer is two-thirds of its former size.

October 2nd (that is, four days later). The ulcer measures 1¼ in. by ½ in. It is surrounded by a zone of thick epithelial growth of whitish colour, soddened by the solution.

The patient was then dismissed with a dry dressing. The remainder of the ulcer required a fortnight for healing.

Dr. Wallace writes that he has used the solution in several cases in which a drainage tube track has been slow in closing.

An example occurred in an obese woman whose healing powers were of a poor kind. Healing by first intention occurred, but the cicatrix was thin and weak, and broke down superficially without apparent cause. An immediate change took place when allantoin solution was employed as a dressing, the epithelial margin thickened and quickly spread in towards the centre, permanent healing being secured by the end of five or six days.

Dr. Kidston records an excellent result in a chronic myxoedematous ulcer which was making very slow progress under other dressings, but with the use of allantoin the progress was steady, and a ring of young epithelium could be seen growing in from the margins. He reported that the scar left was much more healthy than had been the case with previous ulcers in this patient (she had suffered from them before), and that the scar was strong and healthy.

Allantoin in Gastric Ulcer.

The following case suggests that allantoin may have a useful application in gastric and other internal ulcerations:

On February 17th, 1911, a woman aged 47 was admitted into my ward in an extremely debilitated condition in consequence of a very severe attack of haematemesis. For many weeks previously she had suffered from pain after food, and had vomited persistently for a fortnight prior to her admission. Even water caused pain and was immediately rejected. There had been melaena for some time prior to the attack of haematemesis for which she was immediately admitted. For twelve months she had been conscious of pain on pressure over the abdomen, and had noticed a lump in the epigastrium, extending into the hypochondrium. This woman was so feeble that the ward sister said that it was a pity that a patient so ill and advanced in disease should be sent into hospital. I felt disposed to agree with this opinion, because on examining her abdomen I found a tumour just underneath the ribs on the right side. It was rounded, irregular, and intensely painful, and my impression at the time was that she had a carcinoma of the stomach, an opinion which was strengthened by the fact that she had an undoubted cancer of the breast. When the irritability of the stomach subsided, she was given the mucilaginous infusion of comfrey root reinforced with some of the saturated solution of allantoin. In addition to the improvement which took place in her stomach symptoms, in the course of a month the abdominal tumour disappeared, an area remaining, however, which was extremely painful on pressure; but in time this also disappeared, and what I had taken to be a malignant growth had vanished.

I have treated other cases of gastric and duodenal ulcers in the same way, and have reason to think that it is a helpful measure for them. My experiences with allantoin have led me to believe that it may prove to be of considerable practical utility, not only in the types of ulcers to which I have referred, but perhaps also in tuberculous cases and even in corneal ulcerations, and I would suggest to my surgical brethren the possibility of its being serviceable as a dressing when skin grafting has been performed. It is easy of application and, so far as I have seen, non-irritating. Although allantoin itself is somewhat expensive, the solutions for application only require to contain from 0.3 to 0.4 per cent. of the crystals.

In conclusion I desire to thank all those medical men who have assisted me by sending cases or by making independent observations, and I am especially indebted to Sir William Hartley (who provides funds for this research), and to Dr. Titherley and Professor Harvey Gibson and other scientific friends at the university who have done so much to assist and encourage me in the work which I have undertaken.

REFERENCE.

[1] Schittenhelm and Seisser, *Zeit. Exp. Path. Ther.*, 1909, vii, 116-133. Hirokawa, *Biochem. Zeit.*, 1910, xxvi, 441-457. Wiechowski, ibid., 1910, xxv, 431-459.

THE NEW CELL PROLIFERANT:

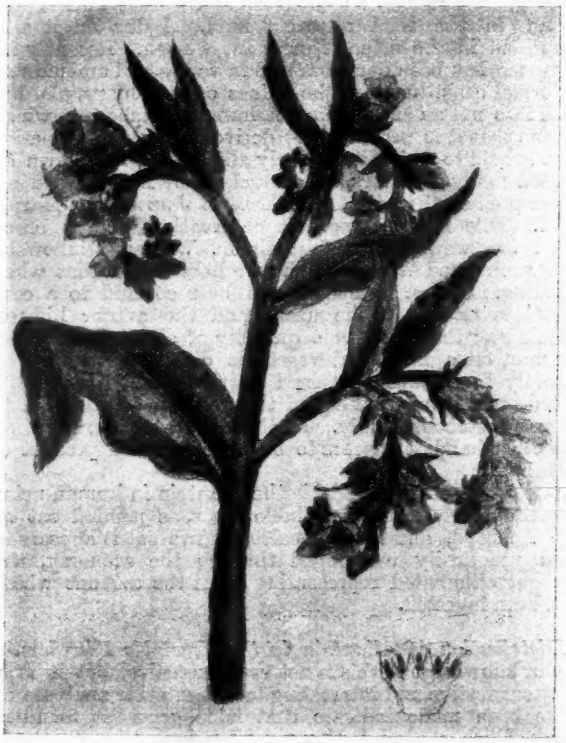
A NOTE ON THE SYMPHYTUM OFFICINALE OR COMMON COMFREY.

BY

WILLIAM BRAMWELL, M.A., M.D., B.Ch.,

LIVERPOOL.

An interesting question was raised at a recent meeting of the Liverpool Medical Institution, when Dr. Macalister introduced the subject of a long-forgotten remedy—the *Symphytum officinale*, or common comfrey—which once held a prominent place in the medical armament of the older writers. Dr. Macalister has wisely had this singularly efficacious remedy analysed, and Dr. Titherley and Mr. Coppin (of the chemical department of the Liverpool University) have discovered that the root is rich in allantoin, which they found to be a "potent cell proliferant."



I have on more than one occasion cured old ulcers which have resisted other treatment, by the simple extract from the root applied on lint to saturation. After a few hours this dressing, in favourable cases, sets quite hard, and can only be removed by the lengthy application of water, which is often more tedious and painful than the average patient, who has been in the habit of applying some simple dressing, cares to endure. This hard setting acts, in some measure, like strapping, drawing the edges of the ulcer towards one another, but probably much more

evenly and accurately than the most skilful strapping could effect. This looks as though the cure is wrought similarly to healing under a scab.

One patient, an old gentleman of gouty diathesis, who will not diet or take medicine, finds the nightly application of the mucilage of symphytum the only remedy of the many he has tried which gives him any relief for pruritus ani. His sufferings at one time were so intense that he says he could not sleep for weeks together.

I judge the explanation of its efficacy in this case to be very simple. When the mucilage is taken into the mouth there is a sense of dryness, due to some astringent principle, probably tannin; at the same time, if the air be drawn in, there is a sensation of coldness and numbness much like that felt after peppermint, though in a lesser degree, but without the previous burning sensation, and hence it is slightly anaesthetic. In pruritus ani these two principles acting together, the one driving back the acid-laden blood, the other soothing the irritated nerve endings, will, I think, account for the relief which is felt in this troublesome complaint.

Acting on this principle, I have frequently used it internally as a last resource where more elegant preparations have failed—for example, in gastralgia, when I have believed this to be due to an irritated gastric mucosa, and to ease the pain of and to cure gastric ulcer. In these cases its efficacy has been much more wonderful than its effects in external applications in cases like the above; and here, too, its cell-proliferating capabilities, which Dr. Macalister's colleagues have discovered, will be a large factor in promoting the growth of new mucous tissue over the irritated and congested surface of gastric ulcer.

It is indeed refreshing and gratifying, in these days of serums and vaccines and highly complicated preparations, the administration of which, in some cases, is fraught with the gravest possible danger and soul-harrowing anxiety on the part of the administrator, to find a physician of Dr. Macalister's standing setting on foot the investigation of so simple and natural a remedy as common comfrey.

Καὶ τὰ φυλλα τοῦ ξύλου εἰς θεραπείαν τῶν ἐθνῶν.

TREATMENT OF PUERPERAL SEPTICAEMIA BY VACCINES.

By A. HAWKYARD, M.D.Durh.,

LEEDS.

THE history of the following four cases throws some light, I think, on the common cause of puerperal septicaemia. In regard to the first case, it seems to me, judging by the three subsequent cases, that I was right in ascribing the nurse's suppurating finger as the cause of the patient's illness.

I should think the colon bacillus is never found in the pus of a recent abscess, though I have been told it is found sometimes in old chronic abscesses. Streptococcus, colon bacillus, and staphylococcus swarm in faeces, especially colon bacillus, and I think we may take it that if colon bacillus is found inside the uterus, it has been conveyed there on the finger of the examining hand. Even with the greatest possible care it is impossible sometimes to avoid doing this; and conversely, in the absence of the colon bacillus, we must look round for some other cause. I think it would be impossible to infect a patient with *streptococcus only*; if faeces had been introduced into the uterine passages and caused septicaemia, colon bacillus would surely also be found.

These cases illustrate the very great importance of first of all identifying the infecting organism or organisms. It is obvious that one cannot expect recovery, or even improvement, in a case of septicaemia caused by the triple infection of streptococcus, colon bacillus, and staphylococcus if a vaccine prepared from streptococcus only be used. Judging from my experience, we may expect to find the colon bacillus helping to cause puerperal septic conditions in nearly all these cases. It would be extremely useful, therefore, if there was on the market a vaccine prepared from streptococcus, colon bacillus, and staphylococcus, so that valuable time would not be lost in waiting for the preparation of an autogenous vaccine.

The best mode of obtaining a swab of the uterus is to introduce, through a speculum, the swab into the upper part of the uterus, previously having cleansed with sterile wool the vagina and os uteri.

CASE I.

On January 7th, 1911, I delivered a primipara, aged 21, instrumentally. On January 9th she had a rigor, and a temperature of 106°. I injected a stock vaccine of streptococcus, and had an autogenous vaccine prepared at the Yorkshire Pathological Laboratory, Leeds, from a sterile swab which had been introduced, with proper precautions, into the uterus. The immediate result of the administration of the vaccine was to bring down the temperature.

On January 11th, the temperature again rising, I administered ¼ c.cm. (2½ million) of the autogenous vaccine, the result being to bring down the temperature to nearly normal. On account of rising temperature vaccine was administered—on January 16th, 5 million, on January 19th, 10 million, after which the patient made an uninterrupted recovery, and was practically well on January 31st. I am sorry no temperature chart was kept, but I used vaccine when the temperature rose to about 104°. The report from the laboratory was to the effect that the infection was due to a nearly pure streptococcus infection, a very small number of colonies of staphylococcus being present.

This case is important because it resulted in an action for slander being entered against the patient's husband at the assize court by the nurse in attendance. I found her to be suffering from a suppurating finger (it had been bad more than a fortnight), and when I received the pathologist's report I had no hesitation, seeing she had handled the patient's parts, in expressing the opinion, when questioned by the husband, that the suppurating finger was the cause of the illness. Subsequent experience has justified this opinion.

CASE II.

Whilst the above case was under treatment I saw a case of puerperal septicaemia in consultation with another medical man. The patient had been ill for about a fortnight. A swab of the uterus was taken and the infecting organisms were found to be streptococcus, colon bacillus, and staphylococcus. A vaccine was prepared and the patient improved under its administration for a time, but she died about eight weeks after confinement, of pneumonia. Had the vaccine treatment been commenced earlier it is probable the result would have been different.

CASE III.

On April 29th, 1911, I was called in to stitch the perineum of a woman who had been delivered by a trained midwife. On April 30th the patient had a rigor and was obviously commencing with septicaemia. A stock vaccine of streptococcus was at once administered, and a swab of the inside of the uterus was taken. The infecting organisms were found by the pathologist to be streptococcus, colon bacillus, and staphylococcus. Under treatment the patient recovered. I need not enter into details, as the temperature chart is annexed, and sufficiently indicates the course of the illness. It is a twelve-hour chart, but the four-hourly chart which was taken during the whole of the illness indicates more clearly the beneficial effect on the temperature of the vaccine injections. The initial dose of the autogenous vaccine was 2½ million on the fourth day of illness, followed by 5 million on the sixth day, 10 million on the seventh day, and again 10 million on the eleventh day, the temperature being 105°. There was no apparent need for further vaccine treatment after this.

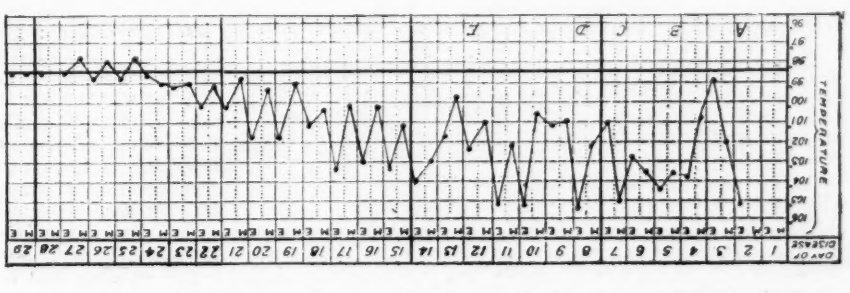


CHART (Case III).—A, Stock vaccine; B, autogenous vaccine, ¼ c.cm.; C, autogenous vaccine, ½ c.cm.; D, autogenous vaccine, 1 c.cm.; E, temperature at noon, autogenous vaccine, 1 c.cm. Rigor occurred on the second and seventh days.

CASE IV.

Early last month (November) I saw a woman recently delivered. For reasons not necessary to mention, I sent her into hospital. She developed puerperal septicaemia, a swab of the uterus disclosing a pure colon bacillus infection. She was treated by autogenous vaccine and recovered.

SALVARSAN IN YAWS.

BY

HENRY ALSTON, M.B.,

MEDICAL SUPERINTENDENT, ST. AUGUSTINE YAWS HOSPITAL, TRINIDAD.

I AM able to give the results of the treatment of 500 cases of framboesia with salvarsan at the St. Augustine Yaws Hospital, Trinidad, from January to October, 1911. Intramuscular injections only were used, and the usual dose was 9 grains (0.6 gram) for an adult.

The 500 cases were injected as follows: January (20), February (1), March (14), April (87), May (68), June (75), July (101), August (17), September (87), October (30).

The first case was injected on January 4th and the 500th case on October 14th.

The injections were made by Drs. Rost and Cleaver and by myself. Dr. Cleaver kindly acted for me when I had a holiday, and gave most of the injections.

I write this on November 28th, when six weeks and four days have elapsed since the 500th case was injected.

Results.

498 cases are cured (99.6 per cent.).
409 cases were cured with one injection (82.0 per cent.).
75 cases were cured after a second injection.
14 cases were cured after a third injection.
The total number of injections was 603.

Stubborn Cases.

Two of the cases are not yet cured:

S. C., aged 7 years, male. Injected on September 16th. I reinjected him on November 11th.
T. M., aged 14 years, male. Injected on October 2nd. I reinjected him on November 8th.

Both cases show amelioration. Each will be given a third injection next week.

Relapses.

Only 5 cases discharged cured came back, and they were cured with a reinjection. Before salvarsan was used relapses were 12 to 14 per cent.

Complications and Deaths.

When Dr. Cleaver was acting for me, 4 deaths occurred among cases that had been injected by him. Dr. Cleaver is of opinion that none of the deaths were the result of the injections with salvarsan. No local gangrene, no nerve or ear complications, and no dimness of sight occurred in any case. The only complication was the formation of an abscess at the seat of injection in 2 cases.

Deaths at the St. Augustine Yaws Hospital from May to September this Year.

E. S., male, 60 years. Injected May 2nd. Took ill May 18th. Died May 30th. Cause of death certified by Dr. Cleaver to be stomatitis and diarrhoea.

Rammarine, male, 3 years. Injected July 8th. Took ill July 16th. Had fever. Passed 50 ascarides. Died on July 19th. Death certified by Dr. Cleaver to be due to fever associated with worms.

Meenaram, male, 65 years. Injected twice, June 5th and July 15th. Had gonorrhoea. Took to bed August 2nd. Died September 3rd. Cause of death, malarial fever and diarrhoea.

Seecharan, male, 11 years. Injected September 16th. Took ill on September 27th and died same day. Cause of death, fever and convulsions.

There were 103 deaths at the St. Augustine Yaws Hospital during the ten years preceding the use of salvarsan—an average of ten deaths per annum. Seventy-four per cent. of the yaws cases admitted to the St. Augustine Hospital have conspicuous painless enlargement of the femoral lymphatic glands. When discharged cured a minority are noticed to have lost the femoral swellings; a majority retain them, but they are reduced in size and softer.

The absence of complications (except a local abscess at the rate of 1 for every 301 injections) shows that salvarsan is not in itself harmful, and that the deaths and serious complications in the treatment of syphilis attributed to the drug must be due either to the method used or to complications which belong to syphilis alone.

It is usually stated that the active agent for curing in salvarsan is the arsenic. I have proved by experiments that such organic arsenic compounds as sodium cacodylate and arsarcetin have no effect in yaws cases, and that the efficacious preparations soamin and orsudan are far behind salvarsan in curative power.

Mercury utterly failed at the St. Augustine Hospital as a cure for yaws, so if there be the choice of two drugs for syphilis there is no such choice in the case of yaws.

Conclusion.

Salvarsan is a specific for yaws, and there is no danger attending its use for this disease.

AN EXAMINATION OF ABOR ARROW POISON.

BY

F. N. WINDSOR, B.A., B.Sc., M.B., MAJOR, I.M.S.,

CHEMICAL EXAMINER TO GOVERNMENT, BENGAL.

THE material here discussed was scraped off an arrow-head removed from a wounded man. It was moist and earthy looking.

Resinous Body.

An oleaginous resinous body was extracted which was soluble in alcohol (90 per cent.) and dilute acetic acid, also in ether and in chloroform, but insoluble in water. It gave the "croton oil reaction" on the tongue and in the pharynx. A little rubbed on the skin of the forearm raised a crop of minute papules in twenty hours. This patch was slightly reddened and itched; it was not painful, and only slightly tender on pressure; after ten hours more it had faded and slowly resolved. Croton oil itself will vesicate the skin. Inoculation of half the extract from this one arrow-head into a guinea-pig gave rise to no symptoms of poisoning.

Residue.

The insoluble residue was dry and powdery. It consisted of vegetable fibres, cells, and detritus, with some earthy matter, but no animal tissue; it gave no physiological reaction. A minute trace of an alkaloid-like body was obtained which had a slightly bitter taste, but no other characters by which it could be recognized. There was no aconite present in the poison.

Conclusions.

I suggest that aconite is not used by the Abors, and that the idea that it is present on their arrow-heads is due to the somewhat similar physiological tongue test. Using the frog test no confusion between the two could arise. There is no anaesthesia with croton, and to an "educated tongue" the burning, tingling sensation is different.

It would seem that the "arrow poison" is a paste made by pounding the soft parts of *Croton tiglium* plant, and not obtained from the seeds.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

HYDRAMNIOS: TWINS: ADHERENT PLACENTA.

MRS. McD., aged 35, who had had four children, complained of pain over the right lower ribs, with sickness and vomiting. Pleurisy was detected, and treatment ordered accordingly. The abdomen was noted to be markedly distended, and the patient calculated she was about six months pregnant or thereabout. It was obvious that there was much discrepancy between the size of the abdominal tumour and the period of gestation. No heart sounds could be ascertained, nor any fetal parts palpated. Hydramnios was diagnosed, and the case watched.

The pleurisy and stomach symptoms cleared up, but the patient remained confined to bed on account of abdominal distress and vague pains. The urine contained some sugar, but no albumen. Her previous labours had been normal in every respect. The swelling gradually increased in size until, before delivery, the abdominal distension was enormous, the patient's general condition meanwhile keeping quite good.

Labour set in ten days after the case was first seen. The pains went on slowly, and a bag of membranes could be felt presenting. The patient, whose general condition continued satisfactory, was allowed to progress for a time in the hope that a moderate amount of cervical dilatation might take place. This, however, proved an exceedingly slow process, and after the patient had been in labour for

a few hours, the os then admitting two fingers, it was decided to rupture. Fluid, which was carefully collected, escaped freely, the hand meantime in the vagina, and the wrist used to plug the opening from time to time. During this escape an attempt to turn proved impracticable, owing partly to insufficient dilatation of the os, and eventually a head presented. After a little difficulty in applying forceps this child was delivered easily.

A twin pregnancy was now ascertained. Moderate abdominal pressure caused the second child to present transversely. Delivery was quite soon effected, the amniotic sac in this case being complete with little liquor. Both children were males, and the latest born showed signs of life for a time.

The placenta of the second child came away normally, but that of the first was adherent, necessitating extensive separation right up to the fundus. At once, after completion of this stage ergotin was administered hypodermically, and a hot intrauterine douche containing lysol given. The fluid constituting the hydramnios was afterwards ascertained to measure four and a half gallons.

The puerperium was quite uneventful, and the patient made an excellent recovery.

Manipulations and procedure in the case were much facilitated through excellent assistance given by the Queen's district nurse.

J. G. McDOUGALL, M.B.Ed.

Kinlochleven, Argyllshire.

EFFECT OF CANE SUGAR ON THE UTERINE MUSCLE.

I read with interest Dr. Carter's "Case of Cardiac Failure Treated by Cane Sugar," reported in the BRITISH MEDICAL JOURNAL of November 25th, 1911.

The effect of cane sugar on heart muscle seems to have been known for some time, though, I believe, the knowledge is by no means widespread. The effect of cane sugar on uterine muscle is, on the other hand, well known, both to medical men and to the laity.

"It is said to be of considerable assistance in increasing the energy of the uterine contraction in labour" (*Practitioner*, September, 1907, p. 439). This has been made use of by French people in inducing an otherwise slack uterus to produce good effective labour pains. Sugar is thus given either in solid form or in solution with, I believe, very good results.

In Egypt it is usual to give infusion of caraway seeds, well sweetened with sugar, for at least one week after delivery. This is believed to hasten and increase the mammary flow, as well as to bring about a speedy involution of the uterus. What good effect there may be is attributed to the caraway seeds, while sugar is considered only as a sweetening agent. To medical men, familiar with the physiological and therapeutical action of cane sugar, it is only natural that a good deal of these beneficial effects should be attributed to the good offices of cane sugar.

This beneficial effect suggests to me the employment of this home remedy in such cases as subinvolution of the uterus when the administration of drugs may have some retarding influence on the mammary secretion.

Cairo. H. SHAHEEN, M.R.C.S.

OEDEMA OF THE EYELIDS TREATED BY BURIED STRANDS OF SILK.

IT is acknowledged that treatment of this condition has hitherto been unsatisfactory. Mr. W. Sampson Handley [1] suggested artificial lymphatics in the form of sterile silk threads, and Mr. A. B. Mitchell,[2] of Belfast, has published a successful case. A report of a case I have had may be of interest.

N. N., aged 30, came to the Ophthalmic Institution, Glasgow, in February, 1911. In 1909 she received a slight cut in the skin above the right eye, and this, in two weeks' time, was followed by erysipelas, which began at the wound and spread over the forehead, affecting the right side more severely than the left. After the attack the upper eyelids remained swollen, the right more so than the left; they were soft, bulging and overhung the eyeballs. The lower lids were unaffected.

The method of procedure was practically that suggested by Mr. Handley. I used a long, somewhat blunt needle threaded with No. 8 tubular silk. A small incision was made just outside the outer canthus, and through this the needle was passed and carried in the substance of the lid along its lower margin towards the inner canthus, where it was brought out through a small incision. The needle was then unthreaded, and again threaded with the end emerging at the outer canthus. It was inserted again at the outer canthus and thrust downwards in the cheek for an inch or more and brought out through a small incision and unthreaded. The needle, threaded with another thread, was once more inserted at the outer canthus incision and this time carried through the upper part of the lid and out at the opening at the inner canthus. The end emerging at the outer canthus was carried into the substance of the cheek as before. The ends of the threads were shaved off and the wounds closed with collodion. A general anaesthetic was employed and the usual antiseptic precautions observed.

For a week there seemed little improvement; then the swelling went down, and now, while the lids are not quite normal, they are nearly so. There was a little suppuration over one of the threads in the left cheek, and part of the thread had to be removed; thereafter the suppuration ceased, and now scarcely any trace of the operation is noticeable.

It seems probable that the small incision at the outer canthus may be followed by sufficient cicatricial contraction to cause some obstruction in the line of drainage at a place where there is no depth of soft tissues. I think this could be obviated by entering a long curved needle at the inner end of the lid and carrying it through into the cheek without interruption.

J. ALEXANDER WILSON, M.D.,
Assistant Surgeon, Ophthalmic Institution, Glasgow.

[1] BRITISH MEDICAL JOURNAL, April 9th, 1910.
[2] Ibid., November 20th, 1909.

ANTE-PARTUM HAEMORRHAGE.

I HAVE read with great interest Dr. Herman's paper on *ante-partum* haemorrhage. There is one cause of this trouble not referred to, and that is the traction caused by an unusually short cord. I can remember two striking instances of this. In one there was very profuse haemorrhage, the os was fully dilated, but the head although coming down somewhat with the pains, which were strong, was pulled back again. The patient's condition when I got to the house, which was many miles from my own, was getting serious from loss of blood. I at once proceeded to deliver by forceps, and when the head was brought down the cause of the trouble was at once seen—the cord was wound five full times around the neck. As soon as possible the cord was tied and severed and the placental end shot up out of sight. The rest of the birth was rapid once the restraining cord was cut. The long end of the tape used for tying was a guide for the short end of the cord. The placenta showed how much had been detached before birth. The cord was under the average length, and only a very short piece led from the child's neck to the placenta. Recovery was uneventful and the child lived.

In a second case the total length of the cord was only about ten inches. It was not around the child's neck. The haemorrhage was much less. Forceps had to be used and the cord tied, cut, and let go. Recovery of mother and child took place normally.

With regard to plugging the vagina I cannot understand Dr. Herman describing this as "horribly painful." Discomfort there is, but a rational method of plugging only causes discomfort and not pain. Personally I always carry a Sims speculum in my bag. If I have to plug I put the patient on her side, introduce the large end, and get the nurse to hold the perineum well back. The first few inches of the bandage or lint is covered with vaseline dusted over with boracic powder. The vagina can be readily packed, using the retractor, a sponge holder, or even the handle of a long spoon. As the upper part of the vagina is filled the speculum is gradually drawn down. In the absence of a Sims speculum, the handle of a big tablespoon can be used to retract the perineum, and the vagina can easily be packed with only a moderate amount of discomfort. If Dr. Herman will use either of these methods he will, I feel sure, readily qualify his statement as to packing the vagina being "horribly painful."

The plugs excite uterine contractions, and so help to control haemorrhage.

LEONARD W. BICKLE, F.R.C.S.Edin.

Adelaide, S. Australia.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

NORTH OF ENGLAND BRANCH: NEWCASTLE-UPON-TYNE DIVISION.

THE second winter scientific meeting was held in the Royal Victoria Infirmary, Newcastle-upon-Tyne, on Friday, December 15th, 1911, when upwards of 100 medical men were present.

Practical Points Concerning the Sanatorium Treatment of Pulmonary Tuberculosis.

Dr. BEATTIE, in delivering a short address on this subject, said that a wrong impression existed in the minds of the laity and also in those of many members of the medical profession concerning the curative effects of sanatorium treatment. He defined a sanatorium as being merely the best special hospital devised for the treatment of pulmonary tuberculosis, securing in a large proportion of cases arrest of that condition, and in all cases having an undoubted educational value. He laid great stress upon the necessity for early diagnosis, in not neglecting to examine the lungs in subjects complaining of anaemia, languor, dyspepsia, loss of weight, morning cough, etc., in recognizing the tuberculous origin of a large proportion of cases of pleurisy and haemoptysis, and in not waiting for the presence of tubercle bacilli in the sputum. He regarded localized areas of crepitation, best elicited after coughing, as the most reliable objective evidence. In doubtful cases, as a diagnostic aid, Koch's Old Tuberculin in dilutions of 1 in 100 to 1 in 1,000 was more certain and safe than von Pirquet's or Calmette's or Moro's methods. He insisted that patients in whom the infection was active, as indicated by pyrexia, were not in a condition for transport, and that their interests were best served by rest and home sanatorium measures until the temperature at all hours had been normal for a fortnight. He said a sanatorium depended for its success upon its resident medical officer, who must be not only a capable physician but a strict disciplinarian. In reviewing the sanatorium régime, he considered rest as being of primary importance.

1. Rest to the body generally.
2. Rest to the lung
   (*a*) by the avoidance of expiratory efforts, such as coughing, singing, shouting, laughing, etc.;
   (*b*) by the avoidance of rib elevation movements.
3. Rest before food.

Exaggerated notions existed with regard to the necessity for fresh air. Indeed, the sanatorium régime had been wrongly designated the "fresh air treatment." It was not necessary to have more fresh air than was sufficient to maintain the atmosphere in living and sleeping rooms equal in freshness to that out of doors. There was sometimes a disadvantage in starving and draughts through risk of pleurisy or bronchitis, and consequent unrest owing to increased cough. Concerning food, cramming was no longer deemed necessary, but a sufficient ingestion of proteids and fats was desirable to increase weight as evidence of improving powers of resistance. Graduated exercises were necessary or desirable in apyrexial cases, at least to the extent of preventing cardiac dilatation, and for the further purpose, as advocated by Patterson, of bringing about autoinoculation with tuberculins generated at the patient's own foci. The educational value of measures for the prevention of reinfection of the patient or the infection of others could not be overestimated. Treatment in a sanatorium was by no means limited to the above régime, and the daily supervision and direction of the medical attendant, but included all forms of symptomatic treatment, such as the exhibition of antiseptics by various routes, and also, wherever desirable, the curative administration of tuberculins in suitable cases. The great disadvantages under which the system at present laboured were the scarcity and cost of such institutions and the inadequate periods of time spent there. Although arrest in early cases might be attained in six months, a firm cicatrix could not be secured within from eighteen months to two years. In conclusion, he reviewed the prospects expected from compulsory notification, and expressed hopes for some co-ordinate effort, such as the establishment of isolation hospitals for the incurable poor, a greatly increased number of sanatoriums, and the establishment in every town or district of dispensaries for the treatment of sufferers from tuberculosis.

Phthisis in Miners.

Sir THOMAS OLIVER illustrated his remarks on phthisis in miners by a series of lantern slides, in which he demonstrated the effects of dust upon the lungs, the phagocytic powers of certain cells within the alveoli, and the transportation of dust particles to the bronchial glands and subpleural areas by means of the lymphatics. The alveolar catarrh induced by the physical injury from the dust is followed by a proliferation of the fibro-connective tissue cells of the alveolar walls, which in the end leads to marked fibrosis of the lungs. In addition to the changes set up in the lungs in experimental anthracosis which he had induced in animals, and which showed the earlier stages of the disease, Sir Thomas Oliver threw upon the screen illustrations of gold miners' phthisis, ganister miners' phthisis, and the pneumonic lesions observed in a Kolar gold miner, remarking that in the case of the South African and Indian gold miners the dust which was inhaled seemed to predispose these men to pneumonia. Miners' phthisis—a pulmonary lesion which is of the nature of a fibrosis, and therefore in its early stages not tuberculous—was subsequently contrasted with phthisis in coal miners, Sir Thomas reminding the audience that the old type of lung disease in coal miners, namely, anthracosis, which was still fairly prevalent in Newcastle when he came to the city over thirty years ago, had considerably disappeared owing to the improved ventilation of the mines, and that its place had been taken by the tuberculous type, the infective organism of which was not caught in the mine, but in the home or elsewhere. In reviewing the number of admissions of coal miners into the Royal Victoria Infirmary, Newcastle-on-Tyne, for the last ten years, attention was especially directed to the large number of cases in the neck compared with affections of the lungs, facts of some importance from the point of view of the relationship of trauma and tuberculosis.

Some Complications of Parturition.

Dr. NAPIER BURNETT, in limiting the scope of his address, drew attention to one of the effects of the Midwives Act—that in many districts to-day a doctor's obstetric practice was all but limited to primiparae, the patients in subsequent confinements employing the less expensive district nurse. The first complication illustrated on the screen was that of *Incomplete breech presentation* in primiparae, especially where the thighs were flexed, the legs extended, and the buttocks sinking deep into the pelvic cavity. Personal experience of four such recent cases were detailed, emphasis being laid on the serious prognosis for both mother and child, in the absence of early diagnosis by abdominal palpation. The treatment advocated was the early bringing down of a foot, or cephalic version. The lesser degrees of pelvic deformity which the practitioner is liable to encounter, were then illustrated. While recognizing the value of accurate measurements by the pelvimeter, the importance of the *Relative size of the presenting part* to the pelvis was insisted on. The lecturer strongly condemned the operation known as "high forceps," maintaining that, in the absence of engagement and moulding, forceps should never be employed. After dealing with *Rupture of the uterus* and *Post-partum bleeding*, showing how these conditions are most likely to be produced, special attention was called to the recognition and treatment of *Shock* as a complication of parturition. Dr. Burnett expressed his conviction that much of the morbidity complicating present-day midwifery might be prevented by the employment of rectal saline injections, immediately following difficult labour. Such treatment quickly restores the patient's powers of resistance (depleted by shock) to the invasion of pathogenic organisms.

Oesophagoscopy.

Mr. C. W. M. HOPE, Assistant Surgeon at the Throat and Ear Hospital, Golden Square, London, gave an excellent and highly appreciated demonstration with the oesophagoscope. He showed a malignant growth at the lower end of the oesophagus of an elderly lady, local anaesthesia

only being employed. Mr. Hope also gave a demonstration with the gastroscope.

Gall-stone Disease with Jaundice.

Mr. G. GREY TURNER gave a lantern demonstration on gall-stone disease with jaundice. He said that on a previous occasion he had spoken on gall-stone disease without jaundice, and the secretaries thought it well that he should finish the subject. The first slides illustrated points in the development and physiology of the liver. The speaker said from a surgical point of view the functions of the liver were most important, so much so that obstruction of the common duct amounted to a systemic disease. The varieties of gall stones were shown, some in section, demonstrating the formation of a common duct stone on the nucleus of a smaller stone from the gall bladder. The pathological consequences of impaction in the common duct were next dealt with, and slides shown illustrating the bile-logged liver and cases of septic cholangitis with abscesses. Three groups of cases were next separately dealt with—namely, those in which the stones pass after producing temporary obstruction, those in which chronic impaction occurs, and those in which there is intermittent biliary fever (Charcot) with ball-valve obstruction. The clinical features were pointed out and the diagnosis briefly referred to. Using Mayo's figures, it was shown that gall stones without jaundice were operated upon with a mortality of 3 per cent., while when complicated with jaundice and sepsis the mortality was 22 per cent. Finally, a specimen was shown in which gall stones had existed for years with many attacks of jaundice and in which after the last attack pancreatitis had supervened, the whole of the pancreas having sloughed, leading to the death of the patient.

Reports of Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF DISEASES OF CHILDREN.

Friday, December 15th, 1911.

Dr. G. A. SUTHERLAND, President, in the Chair.

Tuberculous Joint Disease in Children.

MR. A. H. TUBBY, in a paper on the indications for surgical interference in tuberculous joint disease in children, and the nature of the operations which might be performed, said that tuberculosis of joints was such only in its initial stages, for all the succeeding conditions of the parts were, as a rule, avoidable sequelae. In adults there was a tendency to limit extension of the disease by the formation of a barrier around it, but in children this did not exist. Abscesses connected with tuberculous joints responded more favourably to aspiration and injection of iodoform or camphor-thymol than to incision and drainage. Excision of the hip was a far from successful operation, and in the knee he performed excision only when conservative measures failed. In respect of all joints, conservative measures usually yielded better results, both as to the cure of the disease and retention of function, than the so-called radical operations. Sir ANTHONY BOWLBY said that tuberculous diseases of the joints in children stood in a different position from similar diseases in the adult because of the much greater powers of resistance and repair shown by the tissues of children. But these powers of repair depended largely upon the health and nutrition of the child, and hence it was imperative to attend to the general health. All possible sources of ill health should be attended to, especially tonsils, adenoids, and carious teeth. Even when the joint affected was in the upper limb the recumbent position should be employed for a time. He also emphasized the importance of the open-air life. The advent of asepsis, he said, had completely altered the whole picture of tubercle in joints, and death was more often caused by sepsis than by tubercle. The greatest possible care was necessary in dealing with abscesses to prevent the joint becoming septic, and at the same time great care was necessary not to infect the neighbouring tissues with tubercle. His treatment of abscess was aseptic incision and temporary drainage. Even in septic cases the limb could be usually saved by directing one's efforts to the general health of the child, by doing all that could be done locally, and by the use of vaccines to obtain aseptic conditions. He amputated less and less frequently for even apparently desperate conditions, for he had seen children recover from most extensive emaciation and amyloid disease, with hectic fever, treated upon conservative lines. In concluding a very favourable view of the curability of tuberculous joint disease in children, he expressed an opinion that what was wanted was increased accommodation in hospitals in the country for the treatment of the disease. Dr. A. BUTLER HARRIS, speaking of the rôle of vaccine therapy in this disease, said that as far as was known at present it did not appear to matter much whether the strain of tubercle bacillus present was of human or bovine origin. The same tuberculin appeared to do well in every case, and the opsonic indices came out equally well whether one or other strain was used. In diagnosis the estimation of a series of tuberculo-opsonic indices was undoubtedly of use. In respect of treatment auto-inoculation was only practicable by the method of passive congestion, and in such the dosage could not be regulated, and a steep negative phase might result. The method was only practicable in joints distal from the trunk, and it was easy to realize that distal joints were less liable to pour excess of inoculating material into the body than the proximal ones; it was also interesting to note that ankles and wrists did better than knees and elbows under this treatment; it was not commended for shoulders and hips. The advantage claimed for this method was that an autogenous vaccine was introduced. This, however, was of little moment, since there was no evidence that one strain of tuberculin was better than another when used for therapeutic inoculation. The evidence he had obtained from some thirteen hospitals as to the value of the administration of tuberculin was somewhat divergent, but he concluded from it that tuberculin, given in small doses under conditions of surgical rest, was a remedy which tended to accelerate the rate of recovery. Mr. ROBERT JONES agreed that there existed the greatest possible difference between joint tuberculosis in the child and in the adult. In the early stage in children joint tuberculosis nearly always ran a benign course, provided that certain things were attended to. The first was that the affected part should have absolute rest; secondly, the child should have absolutely good food; and, thirdly, it should have good country air. He emphasized the importance of children being out of doors both day and night. Immobilization of the joint should be very complete. He believed children were often taken out of their splints too soon. His practice was never to open an abscess until it came up to the surface, and then only by a very small puncture. Sir WATSON CHEYNE said that now he practically never operated for a tuberculous joint in a child. He could not help thinking that tuberculous disease of joints was milder than it was formerly; whether it was that the bacilli were less virulent he did not know. It was known there were diseases which gradually died out. It was certain the modern mode of living was more hygienic. He did not think that operation for such diseases in children could be put out of mind altogether. In the treatment of abscesses he employed antisepsis and asepsis, opened freely, and scraped them out. He always used tuberculin, and thought it did no harm, but he had not yet seen a definite good result which he could attribute to it. Mr. H. J. GAUVAIN (Alton) was an ardent supporter of the conservative treatment, but was fully alive to the importance of radical treatment under special circumstances. His experience led him to believe that in many cases the course of the disease could be foretold, and if it were likely to run a serious course he believed in early operation. Abscesses he invariably aspirated. He emphasized the importance of treating these children in the best country air, in country hospitals specially equipped for the purpose. If all early cases were so treated he believed that there would be about 95 per cent. of recoveries, mostly without deformity. Mr. J. JACKSON CLARKE raised the point as to the number of cases apparently cured in infancy and the number which had recurred in later life. He said that there were a certain number which broke out again in later life. He had not seen a case ameliorated by tuberculin which had resisted other treatment. Mr. SUTCLIFFE (Margate) emphasized the long duration of time these cases required to heal. It took many years to heal a case

of tubercle; the average time for a tuberculous knee or hip was four or five years. Hip cases did best if continually kept in bed for many months. He used tuberculin, but could not say he had seen any definite results from it. Mr. E. M. CORNER said that if there was an abscess the case would sooner or later come to operation, and he preferred to incise the abscess, wash it out, and employ temporary drainage. With regard to the number of cases which healed without operation he suggested that diagnosis was of importance. The diagnosis of a tuberculous hip was really a diagnosis of inflammation of the joint; the tuberculous nature was merely a matter of assumption, and he did not see that the opsonic estimation added much to the presumption that it was tuberculous. He thought that a good number of so-called tuberculous joints which got well were instances of infection by another organism, and not by the tubercle bacillus. His experience with tuberculin agreed with that of the previous speakers, but he had seen cases which did not improve in the ordinary way get well when put on tuberculin. He suggested that some of the successes which followed tuberculin treatment were not due to it, but to some unknown factor which was not yet understood. Mr. LOCKHART MUMMERY advocated a conservative treatment. When obliged to operate he did as little as possible, merely opening an abscess through a small incision, removing any caseous material, and immediately suturing the wound. When septic infection had occurred he had found, after scraping the sinuses, that plugging them with gauze soaked in 5 per cent. formalin often gave good results.

SECTION OF BALNEOLOGY AND CLIMATOLOGY.

AT a meeting on December 13th, 1911, Dr. G. H. THOMPSON, President, in the chair, Dr. GUSTAVE MONOD (Vichy), in a paper dealing with the *Treatment of gastro-hepatic dyspepsia*, contrasted hydrological treatment as carried out at Vichy, Carlsbad, and Cheltenham. Cases of this kind might, he thought, be treated with equal success at each of these health resorts. The chemical analysis of the waters did not explain their therapeutic effect, and waters of widely different chemical composition produced the same clinical results. The clinical standard was the only reliable one, and should form the basis of all hydrological treatment. He had been particularly impressed with the therapeutic resources of Cheltenham, and gave it as his opinion that the waters of this spa, if they were hot, would unite the merits of Vichy with those of Carlsbad—a combination which would confer worldwide renown on a British health resort. He deplored the meagre quality of the literature on Cheltenham from a clinical point of view, and maintained that, unless well-defined clinical indications were furnished, Continental physicians would not feel encouraged to send their patients to an English spa.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

AT a clinical meeting on December 20th, 1911, Mr. J. M. COTTERILL, President, in the chair, the following were amongst the exhibits:—Mr. D. P. D. WILKIE: (1) A woman aged 58 who had syphilis for twenty-five years, and for fifteen years syphilitic psoriasis, and marked leukoplakia of the tongue with deep fissuring. The general condition was one of great debility. She was given 0.5 gram *Salvarsan* nine months ago. The psoriasis disappeared in fifteen days, and all that now remained of the tongue condition was slight fissuring. (2) A woman with a syphilitic ulcer on the leg of six years' duration, and who had given birth to four stillborn children. She received a similar dose of salvarsan in March, 1911; the ulcer healed in four weeks, and in October, 1911, she gave birth to a healthy child. Dr. CHALMERS WATSON: A case of typical *Afebrile rheumatoid arthritis* in a man aged 23, with painful swelling of phalangeal and metacarpo-phalangeal joints, ankles, wrist, and elbow. Under a diet in which animal proteid was restricted and excess of farinaceous food avoided, and a daily mineral laxative, the patient completely recovered. Dr. BYROM BRAMWELL: A female, aged 21, who had been admitted to hospital with marked scoliosis and apparent shortening of the left leg, ascribed to a fall two years before. She complained of pain in the back and left hip. *X*-ray examination showed no disease of either hip-joint, and under chloroform the deformity completely disappeared. The patient, after treatment by isolation and suggestion, had rapidly improved, and now walked perfectly well. Mr. C. W. CATHCART: Several patients after fracture, in whom a perfectly satisfactory functional result had been obtained, although the anatomical alignment of the fractured ends had been very imperfect. Dr. J. V. PATERSON: A case of *Pulsating exophthalmos* following trauma. All the classical signs of this condition were present, but unusual features were the complete immobility of the eyeball, the marked ptosis, and the instantaneous loss of vision.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

AT a meeting on December 15th, 1911, Sir JOHN MOORE, President, in the chair, Dr. O'CARROLL gave an account of *A case of rat-bite fever*. The patient, a man, was bitten on the lip by a rat in March, 1910. After some time the submaxillary glands enlarged, and the patient suffered from recurrent attacks of remittent pyrexia. Each attack lasted four or five days, with an interval between each of three or four days. A month or so afterwards the patient developed a very marked nephritis. Pleural effusion accompanied it and necessitated paracentesis thoracis on several occasions. By the end of the year the patient had so far recovered from all ailments as to be able to return to his work, which involved considerable fatigue and exposure. He had since remained well.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting on December 21st, 1911, Dr. T. R. BRADSHAW (President) in the chair, Mr. A. A. BRADBURNE reported the case of a family in which *Ptosis and immobility of the eyes* had been present in five generations and traceable as far back as 1710. He described the condition of the six members at present alive and of seven who were known to have the affection. Dr. E. W. HOPE read a note on the *Notification of pulmonary tuberculosis*, tracing the various stages through it and calling attention to the fact that after January 1st all cases of this order would be taken as included in the Infectious Disease Notification Act, 1889. Mr. R. E. KELLY showed a case in which he had performed *Splenectomy*. The patient, a boy aged 9, had been run over by a motor car, and was admitted to the Royal Infirmary, suffering evidently from internal haemorrhage. On the abdomen being opened, within one hour of the accident, the spleen was found severely lacerated and had to be removed. Recovery was uneventful. Six months had since elapsed, and the boy appeared perfectly healthy with the exception of some slightly enlarged lymphatic glands. The blood showed the following changes: Red cells, increased haemoglobin index, but no poikilocytes or erythroblasts; white cells, increased lymphocytes, a basophilia of 2½ per cent. and an eosinophilia.

NORTHUMBERLAND AND DURHAM MEDICAL SOCIETY.

AT a meeting on December 14th, 1911, Mr. C. W. M. HOPE (London), after giving a demonstration of the *Use of the œsophagoscope under local anaesthesia* on a series of œsophagoscope under local anaesthesia on a series of patients suffering from stricture due to various causes, classified possible treatment under the following headings: (1) Dilatation, (2) dilatation and intubation, (3) gastrostomy, (4) radium, following a dilatation. No. 2 was considered the most advisable method of treatment, and advocated strongly. For its accomplishment he recommended a modification of Symon's tube, a silver flexible stilette being passed through the lumen and a vulcanite front being fixed to it. In connexion with radium, he referred to several patients in whom temporary improvement had resulted from its use, and described in detail one case in which there was a septic fungating carcinomatous stricture. Now, after twenty-one months, there was still present some sign of stricture, but all appearance of ulceration had gone, and the œsophagus was lined throughout with apparently normal mucous membrane. The patient was about 1 st. heavier than previously, and was able to swallow solid food quite well.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.

AT a clinical meeting on December 15th, 1911, Mr. H. LITTLEWOOD, President, in the chair, the following were among the exhibits:—Mr. H. H. GREENWOOD: A case of *Melanotic sarcoma of neck* which he had treated with Coley's fluid, and which had seemingly recovered. The patient, a man of 67, was first seen on February 2nd, 1911. On the right shoulder, just above the middle of the clavicle in the posterior triangle, was a lump 1 in. by ½ in.; the skin over it was normal, except a tiny black speck. On March 1st, 1911, a portion was excised under cocaine; it was found to be solid and coal-black. It was reported as melanotic sarcoma, after microscopic examination. On March 3rd, 1911, the growth was dissected out, and proved to be extensive. The whole of the growth was coal-black; small outlying portions lying on the front of the vertebrae were left. Stitches were removed on March 10th, healing occurring cleanly. On March 13th, between the stitch marks, sprouting portions of black growth began to show. On that day ½ minim of Coley's fluid was injected; this was followed by a rigor and a temperature of 101°. The injection was repeated every two days until March 31st, the dose being increased to 3 minims, when nux vomica was given to counteract the prostration. The injection had been continued up to the present time, being made sometimes into the growth, sometimes into the chest wall over the pectoralis, and the dose had been increased to 15 minims. Mr. W. THOMPSON: A case of *Xerostomia* in a female aged 23. Four years ago she had some swelling in the right parotid gland, followed a few days later by swelling of the left parotid. This went away after ten days, but had recurred at frequent intervals ever since. She had not been free from the swelling for more than two or three months at a time, and had suffered from excessive dryness of the mouth for two years. Dr. W. H. MAXWELL TELLING; A case of *Unilateral facial sweating* in a male aged 60; he had been troubled with the present condition twelve years; it came on shortly after going to America. There was sweating of the left side of the face and shoulder directly limited to the middle line. The parts felt hotter when sweating. The condition was very apparent under observation, and had recently got sufficiently severe to trouble him during the night. There were no other objective signs, and no pupillary changes were visible during the sweating.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

AT a meeting on December 21st, 1911, Dr. ERNEST KNIGHT, President, in the chair, Dr. PERCIVAL HAY, in a paper on corneal ulcer, dealt with some points in the etiology of the disease, and showed that the age incidence of the *Hypopyon ulcer* coincided with that of pneumonia in adults, a circumstance which seemed to suggest that there was a lowering of resistance to the pneumococcus after middle life. The statement generally put forward by German authors, that the disease is a seasonal one and is favoured by exposure to heat, was shown to be based on false premisses and only partly true. Statistics covering more than 1,700 cases demonstrated that the visual results of treatment were very unsatisfactory. Over 50 per cent. of the cases ended in vision less than $\frac{6}{60}$. By instituting new methods of treatment, in which greater attention was paid to the treatment of the conjunctiva and treatment in the open air, the author had obtained V. $\frac{6}{12}$ in 40 per cent. of his hypopyon cases. Dr. F. H. WADDY recorded four cases of *German measles* which occurred in one family; they presented a strong resemblance to scarlet fever, but differed from it in point of period of incubation, the symptoms of invasion, the nature of the eruption, and the condition of the throat and tongue. None of the patients had ulceration of the throat, but the glands of the neck were swollen. The interval between the eruption in the first case and those succeeding it was twenty-four days, and between these and the last case twenty-two days. The first case was followed by rheumatism and endocarditis. The second case occurred immediately after measles, and it was followed by suppuration in the ear, and three weeks later by acute nephritis. Desquamation occurred in all the cases except the second, in which there was not the least trace of it.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.

AT a meeting on December 20th, 1911, Dr. JACOB, President, in the chair, Dr. S. E. GILL, in a paper on *Ringworm*, described the usual treatment as falling into three classes of work: (1) The use of antiseptics, which inhibited the spread of the disease, but otherwise had but little effect; (2) use of counter-irritants, which did good in so far as they caused epilation; and (3) epilation pure and simple, such as that produced by *x* rays. The latter in the most capable hands cured ringworm in about seven weeks, as compared with as many months by the other methods. The dangers of *x*-ray treatment were much exaggerated, permanent baldness being very rare, and colour changes also rare. From an administrative point of view it was advisable that the exclusion of ringworm-children from school should be in the hands of one person, and consequently their readmission should also be in his hands. If general practitioners would send their cases to the Medical Inspection Department from time to time for microscopic examination and report, it would be useful to them in dealing with a troublesome disease from which very little credit was to be obtained with their patients, and would also be of service in helping the school authorities to prevent the return to school of children who were still in an infective condition. In the discussion Dr. JACOB (President) spoke of the disappointing results from the use of copper ions, which he had tried extensively. Dr. R. WOOD (Ilkeston) favoured the use of sulphurous acid (B.P.). Dr. H. G. ASHWELL and others spoke of the very disappointing effects of ordinary treatment even when carried out systematically in institutions.

HARVEIAN SOCIETY OF LONDON.

AT a meeting on December 7th, 1911, Mr. J. ERNEST LANE, President, in the chair, Dr. J. H. CHALDECOTT, in a paper on *Chloroformization of patients in the upright position*, said that during the past six years he had used the upright sitting position when anaesthetizing patients for nasal and naso-pharyngeal operations in 1,400 cases. In his experience, this position was safer for the patient, grave symptoms rarely occurring, and breathing being easier. Moreover, syncope did not occur, and if a sponge were inserted in the naso-pharynx there was no trouble with bleeding into the larynx. There was little (if any) vomiting after regaining consciousness, and the position was more convenient for the surgeon. The patient should be properly prepared, the chair should be a dining-room or kitchen chair, a high stool being provided for the patient's feet. An armchair—and especially an easy chair—should be avoided. When ready for the operation, the anaesthetist passed his left arm round the patient's neck, thus controlling the position of the head and holding the mouth tube of the Junker in the same hand, the right hand being free. A dental prop should be inserted. Anaesthesia should be induced rapidly with gas and ether, and chloroform administered on an open mask before the Junker was applied.

THE catalogue of Messrs. De Dion Bouton for 1912 is a rather useful pamphlet, for much space is devoted to the photographic illustration of motor bodies, and a good idea of the large choice available in this direction is thus afforded. In addition, the booklet affords succinct information as to the outstanding features of De Dion cars and specifications of its models for the current year.

DR. SEIDELIN, in the *Yellow Fever Bulletin* for November, 1911, describes what he believes to be a new parasite in the blood of yellow fever cases. This organism, he thinks, bears a close resemblance morphologically to various forms of *Babesiidae*, especially to *Theileria parva*. The relationship of this parasite to other blood-inhabiting protozoa cannot be determined before a more detailed knowledge has been obtained of its different phases, especially of those in the mosquito, which may be presumed to be its definite host. Dr. Seidelin is shortly going to Mexico to try to work out the history of the parasite in greater detail. Though some time has now elapsed since he first published his discovery no confirmation of it from other sources has appeared, and in some ways the diagrams given at the end of the report are not altogether convincing. With fresh material, however, Dr. Seidelin may be able to prove that the bodies seen by him are parasites and the cause of yellow fever.

Reviews.

DIAGNOSIS OF CARDIAC DISORDERS.

A RECENT work[1] by Professor AUGUST HOFMANN, of Düsseldorf, will doubtless find many readers, presenting, as it does, the whole subject of cardiac and vascular disorder from the point of view of the experienced clinician. He takes as his text the condition of insufficiency of cardiac power, as shown by cardiac failure under various forms of stress. Following the example of many previous teachers, he has utilized his own lectures, delivered during recent years, and has amplified and brought up to date all those parts which are under special investigation at the present time. Much of the work is devoted to a close description of modern methods of graphic record of the simultaneous movements of heart and vessels, and the author has evidently spared no pains to make this portion of his work as complete as it is interesting. The clinical application of these elaborate methods is at present almost impossible, except under special conditions, nor can it be said that the information said to be conveyed by the multiple tracings themselves is as yet fully accepted by all observers. The interpretation of a normal tracing must be generally agreed upon before much reliance can be placed upon the abnormalities noted in the tracings of disease. But it is only by continued work upon the right lines that unanimity can be attained, and a perusal of Dr. Hofmann's book will show that much has already been done, though more remains behind. Vascular tension and the movements of the walls of arteries and veins in response to the heart's contraction can only be fully determined by means of tonometric apparatus, and it may be noted that the plethysmograph, which was used a good deal some thirty years ago, has again been brought into use in association with the tachograph and the sphygmomanometer. The introduction of the electrocardiograph has already led to a clearer conception of many forms of cardiac irregularity, and with better understanding there may ultimately come a more effective means of treatment, but at present the powers of the physician have not been greatly augmented thereby. In the second part of his book the author enters fully into the subject of cardiac insufficiency, and shows in detail the various influences which may bring stress to bear upon the heart, and the exact manner in which such stress is exerted. The enormous number of these influences is very striking, and the extended bibliography from which they have been drawn gives evidence of the thoroughness with which the subject has been attacked. The vital importance of early recognition of insidious morbid processes can hardly be exaggerated, and there can be no doubt that the instrumental methods of diagnosis have greatly aided the older means of physical examination, and may often have considerably modified prognosis and prophylaxis. The clinical evidence of the failing heart or the thickened vessel is usually only too clear, but a fuller understanding of morbid tracings will in time enable the physician to recognize the early stages by which such morbid changes are being brought about, and thus may point the way by which their increase may be checked. Such work as Dr. Hofmann records shows that the desired result will not be missed for lack of earnest workers in many lands. Of the concluding chapters on the treatment of insufficiency it must be noted that the same completeness is manifest, and that the author is able to draw largely upon his own extended experience. The essence of success may be found in attention to detail, and no point which may remotely bear upon the impairment of the heart's action is regarded as too slight for mention.

There are few things more interesting and instructive to the young morbid anatomist or to the post-graduate student than a tour of a well-stocked museum in the company of a sympathetic demonstrator. Every variety of lesion that may affect any organ can thus be studied more or less minutely as each case may demand, while the appearance of the specimen itself is, as it were, photographed upon the mind. But such mental pictures are apt to fade, and cannot then be called up when wanted. The happy thought has occurred to Dr. G. W. NORRIS, of Philadelphia, to make a series of photographs of the most instructive specimens of heart disease in the five museums in that city, and to publish them in a handsomely presented volume, entitled *Studies in Cardiac Pathology*,[2] with clinical notes and observations explanatory of each case and of the particular points which it serves to illustrate. These observations are in many instances strengthened by apt quotations from recognized authorities, and supply a great deal of historical and statistical information which adds considerably to the educational value of each section. The specimens selected for illustration are for the most part typical examples of the morbid conditions to which the heart and pericardium are liable, and include almost all of them. Many of them are rarely met with, as, for instance, the specimens of gummata and true aneurysm of the heart. Of the photographs themselves, it may be said that they are as perfect as such pictures can be, but it would doubtless add greatly to their realistic value if they were to be reproduced stereoscopically. The use of stereoscopic photographs of anatomical and pathological specimens has increased considerably of late years, and has been found to convey a far better idea of the changes brought about by disease than is possible by the simpler method. Dr. Norris's book should be a welcome addition to the medical library as a work of easy reference from which to gather statistical information, and as a pleasant means of refreshing the memory as to the actual changes brought about by every form of cardiac disorder.

The attempt to convey a clear conception of a sound by means of a verbal description is generally doomed to failure. Comparison with some known and unvarying sound enables the reader to form an idea of his own, but in the long run the sound itself must be heard before its quality can be appreciated. Especially is this the case with regard to the sounds of the heart, whether normal or abnormal, and in his small monograph on *Heart Sounds and Murmurs*,[3] which he presents as a pocket-book for clinical reference on elementary auscultation for the use of students, Dr. BROCKBANK has endeavoured to describe the varied modifications of the normal heart sounds met with in diseased conditions. It cannot be said that he has altogether succeeded in presenting his subject in convincing form. The student at the bedside, puzzled by sounds which are new to him, will not easily find their explanation at a glance. The author has entered at considerable length, for a pocket-book, into the possible causation of the rarer as well as of the commoner murmurs, and many of these explanations are original and well thought out, but they will prove of more interest to the cardiac specialist who takes pleasure in scientific speculation than to the undergraduate student.

It may be admitted that in spite of the great advances that have been made in mechanical means for registering the action of the heart, and of the help afforded by the *x* rays, the difficulties of the diagnosis of its diseases have not been entirely removed, and simple means, requiring no apparatus, by which any additional light could be thrown upon its state would be most welcome. This is what Dr. EHRENFRIED ALBRECHT, a physician practising in Bad Oeynhausen, believes he has discovered, and the purpose of the book before us, whose title may be translated as the respiratory reaction of the heart,[4] is devoted to its explanation. It is usual, if the condition of the heart be not plain, to make the patient go through certain rapid movements, such as quick walking or climbing on to a chair several times in succession, in the hope that by imposing additional work upon the heart any defect in its function will become manifest by undue rapidity or alteration in rhythm, or by changes in its sounds. The plan which Dr. Albrecht recommends is to excite the

[1] *Funktionelle Diagnostik und Therapie der Erkrankungen des Herzens und der Gefässe.* By Prof. Dr. Aug. Hofmann, Wiesbaden: J. F. Bergmann. 1911. (Sup. roy. 8vo, pp. 483; 12s.)

[2] *Studies in Cardiac Pathology.* By Geo. Wm. Norris, M.D., Associate in Medicine at the University of Pennsylvania. London: W. B. Saunders Company. 1911. (Large 8vo, pp. 233; 85 coloured illustrations. 25s.)

[3] *Heart Sounds and Murmurs: Their Causation and Recognition.* A Handbook for Students. By E. M. Brockbank, M.D.Vict., F.R.C.P., Senior Honorary Assistant Physician, Royal Infirmary, Manchester. London: H. K. Lewis. 1911. (Post 8vo, pp. 63; figures 17. Price 2s. 6d. net.)

[4] *Die Atmungsreaktion des Herzens.* Von San-Rat. Dr. Ehrenfried Albrecht. Jena: Gustav Fischer. 1910. (Sup. roy. 8vo, pp. 214. M.5.)

heart by making the patient hold his breath after one or more deep inspirations. He uses a wooden stethoscope, and auscultates at five points—(1) over the absolute dullness in the parasternal line; (2) at the apex and left border of the heart; (3) in the fourth and fifth intercostal spaces between the right sternal border and the parasternal line; (4) in the aortic area; (5) in the pulmonary area. While auscultating the observer must keep his finger on the pulse. The effects of holding the breath may be to induce abnormal pulsations or thrills, to increase the intensity of the heart sounds, to bring out murmurs or make them louder, to increase or diminish the rate of the pulse, to alter the heart's rhythm, or to cause reduplication of the pulmonary second sound. The method is illustrated in an appendix containing summaries of forty-four cases of heart disease in which it was applied to their examination.

MEDICAL DIAGNOSIS.

IN a brief preface, Dr. MITCHELL STEVENS expresses the hope that his volume on *Medical Diagnosis*[5] may prove of some help to those engaged in medical practice. This remark discovers the idea which prompted the compilation of the work, and we believe that the general practitioner will find it to be of the greatest value. As its names implies, it is devoted to the study of diagnosis, and, as the perusal of the work shows, to bedside diagnosis, for there is little or no appeal to the bacteriological laboratory and its methods except when this is absolutely necessary. The author has contrived very fully to set out signs and symptoms, and closely apposes sections dealing with the differentiation of the maladies which present the particular signs and symptoms under discussion. A glance at the table of contents suffices to give an idea of the scope of the succeeding pages, which are divided into twenty-four sections, and include consideration of all the various systems, beginning with a preliminary description of general symptoms and physical signs. So thoroughly are the various sections elaborated, so good are the cross references, and so full of information is each section that we can best describe the volume as an index of diagnosis. It is purely a technical guide, and therefore all the more useful to the busy man seeking to gain information rapidly. We do not, however, wish to convey the idea that the volume is no more than a mere index, for the reader, if wishful, can abstract a large amount of information from the plan adopted by Dr. Mitchell Stevens of grouping all the conditions in which, say, the knee-jerk is absent on one or both sides, in which paralysis occurs in one or two limbs, unilateral or bilateral, or the various conditions of the heart in which murmurs are present near the pulmonary cartilage, say, in diastole. There are many useful diagrams, as, for example, of the cervical brachial and lumbar plexuses. No doubt some of them are purely diagrammatic, but so true is the instinct Dr. Mitchell Stevens reveals as a teacher that each picture serves admirably the object for which it was designed. It is not often we are able to detect errors, but, if we are not greatly mistaken, the portrait of a patient suffering from facial hemiatrophy, given on page 1301, should be labelled one of congenital torticollis, the facial asymmetry seen in this malady being exquisitely shown in the picture. An excellent index closes a volume which will find a well deserved place on the bookshelves of many a busy practitioner.

THE HUMAN ATMOSPHERE.

MANY of the readers of this JOURNAL will already be aware, from recent notices in the lay press, of the claims of Dr. KILNER[6] of London to have demonstrated the constant presence of an "aura" around human beings. We believe that the "aura" as described by clairvoyants has gathered round it a considerable literature, but Dr. Kiln · "especially desires to impress on his readers that his researches have been entirely physical and can be repeated by any one who takes sufficient interest in the subject." From this it might be surmised that Dr. Kilner's "aura" is, in his view, a purely physical phenomenon. Perusal of Dr. Kilner's book, however, does not support this view.

Leaving this point aside for the moment, we note that Dr. Kilner maintains that every one is surrounded by "a haze intimately connected with the body, whether asleep or awake, whether hot or cold, which, although invisible under ordinary circumstances, can be seen when conditions are favourable." The favourable conditions to which reference is made include the following: (1) The subject or the portion of the subject's body under observation must be bare of clothing; (2) must be regarded in dim daylight against a dark or black background; (3) the observer must either look at the subject through a special coloured and transparent screen or must have looked through such a screen at fairly bright daylight for a few seconds before making his observation. The screens, which have been invented by Dr. Kilner, are oblong glass cells, containing a solution of dicyanin in alcohol. It is maintained by Dr. Kilner that looking through the dicyanin screen affects the retina in such a way as to alter the "chromatic focus" of the individual looking through the screen, and to enable him to perceive rays outside the usual visible spectrum. This action, he says, is both cumulative and deleterious, making frequent employment of the screens unnecessary and painful. Dr. Kilner says that his eyes have become permanently affected, so that he is able to dispense with screens under suitable conditions.

According to Dr. Kilner the aura varies in different individuals in size, shape, thickness, texture, and colour, these variations being determined by age, sex, condition, health, mental and emotional qualities, and moral character. The aura is divided by Dr. Kilner into three: (1) A dark band, from $\frac{1}{15}$ in. to $\frac{2}{15}$ in. in width, adjacent to and following exactly the contour of the body, named "the etheric double"; (2) the "inner aura" surrounding the etheric double, composed of granules arranged in striae and of several inches in thickness, this layer fading gradually into (3) a structureless, faint cloud, called by Dr. Kilner "the outer aura." Lastly, Dr. Kilner describes patches and rays, or streams of brightness, emanating from various parts of the body, suddenly appearing and as quickly vanishing. These rays are described as of three kinds: (1) Those appearing in and surrounded by the aura itself and entirely separable from the body; (2) rays proceeding from one part of the body to another; and (3) rays projected straight out from the body into space. As these rays are said by the author to possess no diagnostic value, it would be tedious to give in detail Dr. Kilner's description of them. The point which requires special mention is the author's contention that by suitable subjects these rays can be emitted at will from practically any part of the body. One subject, for example, could make "beams" radiate from the tip of the nose, from the crest of the ilium, or from the nipple. Dr. Kilner seriously maintains that the subject can by "willing" even change the colour of the aura from blue to red.

Passing from these last-named displays, the suggested medical value of the aura proper requires brief mention. As already stated, Dr. Kilner claims to have observed variations in contour and consistence of the aura in health and disease. The aura of the healthy male is apparently fairly uniform in these particulars, but the female aura is said to show great differences. Up to the onset of puberty the female aura resembles the male aura, but after that epoch it is said to be more pronounced in front of the breasts and nipples, to widen at the sides of the trunk, and to show a marked "bulge" opposite the small of the back, these changes being associated, in Dr. Kilner's view, with sexual activities. The bulge at the back is said to be especially pronounced in hysterical women; the epileptic have an asymmetrical aura, the left side showing generally a "contracted" aura. This contraction is limited to the inner aura, and is, according to Dr. Kilner, so typical that he has diagnosed masked epilepsy from this form of aura in a subject of periodic depression. Also local alterations are said by Dr. Kilner to occur over the seat of local affections—for example, in duodenal ulcer, in tumour of the heart, in tuberculous disease of the hip-joint, and in shingles the aura has been found absent over the parts affected. Lastly, to bring this description to a close, "temperament and mental powers, rather than any temporary changes of bodily health, seem to be represented

[5] *Medical Diagnosis.* By W. Mitchell Stevens, M.D., M.R.C.P., Senior Assistant Physician to the Cardiff Infirmary, Lecturer in Pharmacology, University College, Cardiff. London: H. K. Lewis. 1910. (Demy 8vo, pp. 1610; 177 illustrations. 25s.)

[6] *The Human Atmosphere.* By Walter J. Kilner, B.A., M.D.Cantab., M.R.C.P., etc., late Electrician at St. Thomas's Hospital, London. London: Rebman and Co., Limited. 1911. (Demy 8vo, pp. 342 illustrated and with screens. 30s.)

by the hue of the aura." Dr. Kilner says that the owners of blue auras are the most mentally fit, the owners of grey auras being mentally deficient! "Fineness and transparency," says Dr. Kilner, "may be considered a higher type than coarseness and dullness." Again: "Education is a factor which ought, theoretically, to have an immense influence on the aura by its refining influence; *but the changes produced by it are so delicate*" [the italics are ours] "as to be imperceptible by our present means of examination. Nevertheless, it is extremely probable that it has produced a congenital effect through heredity"!

It is needless to point out what possibilities, medical and educational, there are in the "aura"—if it exists. But that is the question. And we may say at once that Dr. Kilner has failed to convince us that his "aura" is more real than Macbeth's visionary dagger. Such question-begging statements, the extraordinary claims of the author, and the use of such terms as "No. 1 auric force," "No. 2 auric force," even when given a scientific air by designating them as "1 AF" and "2 AF," were not reassuring. Following the vague directions given by Dr. Kilner, the reviewer and a friend—the latter a distinguished scientist—made numerous experiments with the screens provided with the book, all with negative results. It is true that the reviewer, after prolonged trial, imagined he perceived a faint whitish line surrounding dimly illuminated objects; but on discovering that this effect was even better produced by regarding the ivory handle of a cane, and, better still, a white plaster cast, personal experimentation was abandoned in despair. Unwilling to condemn as mere vain imaginings what has been stated as a certain fact, unless after full trial under Dr. Kilner's own conditions, the reviewer sought and was accorded a demonstration by the discoverer of auric force. The results were again entirely negative. That he saw nothing, in the crepuscular twilight of the room, in an atmosphere charged with suggestion (indeed, what we were to see was verbally and digitally suggested), except the nude subject against a background neither uniformly nor dead black, proves only one thing—that the reviewer was not markedly "suggestible." If it be true that "seeing is believing," the converse, that believing is seeing, is equally true. This is, we believe, the truth of the whole matter.

NOTES ON BOOKS.

THE contents of the edition for 1912 of *Herbert Fry's Guide to the London Charities*[1] appears to have been brought thoroughly up to date, but otherwise this compact handbook remains unchanged. It gives in alphabetical order a list of all charities either established in, or working from, the metropolis, together with the names of their principal officials, their annual income, the date of their foundation, their address, and the special object which each institution or association endeavours to fulfil. The volume is a very handy reference book on the subjects to which it is devoted, and its price brings it within the reach of all those who have either money to bestow or patients and other persons for whom they desire to find accommodation. Included is an appendix in which various charitable bodies describe their particular needs and claims in their own words.

The edition of *Who's Who*[2] for 1912 contains 118 pages more than the edition for 1911, and we have no doubt that use of the new edition will prove it to be as accurate and complete as its predecessors. It is, perhaps, the most useful of all books of reference of its class, which is the biographical annual. It is completed by a separate volume, *Who's Who Year Book*, which contains tables formerly embodied in the biographical volume, and, in fact, the nucleus of the whole publication. The tables have all been tested by practical experience, and are very useful. A third year book, issued by the same publishers, Messrs. A. and C. Black, is the *Writer's and Artist's Year Book*,[3] giving particulars of British and American journals and magazines, lists of publishers and other information useful to journalists and writers.

[1] *Herbert Fry's Guide to the London Charities.* Forty-eighth annual edition. Edited by John Lane. 1912. London: Chatto and Windus. (Crown 8vo, pp. 293. Price 1s. 6d.)

[2] *Who's Who* for the year 1912. London: A. and C. Black. 1912. (Post 8vo, pp. 2378. Price 10s. cloth, 12s. 6d. limp leather.)

[3] *Writer's and Artist's Year Book*, 1912-1913. London: Messrs. A. and C. Black. 1912. (Post 8vo, pp. 175. Price 1s. net.)

Perhaps nothing shows more plainly the *Wanderlust* which seems to be inborn in almost every Englishman than the warm welcome that books of travel usually meet with in this country. Dr. JOHNSTON ABRAHAM, therefore, may rest assured that the modest record of his voyage in Eastern waters will not pass unnoticed. Like Kipling's soldier, Dr. Abraham has heard the East a-callin', and in *The Surgeon's Log*[4] he gives a very interesting and picturesque account of it as it appeared to him when viewed for the first time from the deck of a trading vessel. His book, moreover, contains some curious tales of life in those far-off lands,

> Where the gorgeous East with richest hand
> Showers on her Kings barbaric pearl and gold,

including a story of Chinese vengeance which for sheer ghastliness would be hard to beat. For the most part, however, the author contents himself with the record of daily events, which, thanks to his simple, straightforward style and quiet sense of humour, proves very pleasant reading. The interest of the *Log* is further enhanced by the excellent photographs which adorn its pages; but we trust that Dr. Abraham will forgive us for pointing out that "In the teeth of the N.E. Monsoon" is a rather inappropriate title for the illustration which faces page 128.

Mr. JAY DENBY had not been very long in Shanghai when he discovered the truth of Bret Harte's famous lines, "that for ways that are dark and for tricks that are vain, the heathen Chinee is peculiar." In the *Letters from China*,[5] which he wrote to his people at home, he gives some amusing examples of the extraordinary ingenuity displayed by the wily Celestial in his efforts to get the better of the unfortunate "foreign devil" who happens to be his employer. Happily for himself, and also for his readers, Mr. Denby is blessed with a keen sense of the ludicrous; and the story of his struggles with bland but mendacious servants is told with much humour. Judging from the unsavoury descriptions scattered throughout the book, the classic definition of the manners and customs of a certain tribe of savages might be applied with equal justice to the Chinese lower classes, for the average "Chink" appears to have no manners, and his customs, for the most part, are "beastly." But the writer has nothing but admiration for the Chinese gentleman and man of honour, "the highest type of gentility there is," and for the marvellous adaptability which is the real reason of the Yellow Peril, and which may one day place the yellow man "in a position to wipe the floor with any other four nations combined." Mr. Denby has been ably seconded in his portrayal of Chinese life by Mr. H. W. G. Hayter, whose admirably grotesque drawings have exactly caught the spirit of ironical fun with which the book is pervaded. The same volume includes a number of short stories, in which, however, the author is hardly at his best.

There is no doubt of the utility of *The Englishwoman's Year Book and Directory*,[6] which has now appeared annually for over thirty years. Its contents are divided into some eighteen sections, each subdivided again into a number of articles, and between them they supply a complete account of everything that women do or may do by way either of gaining a livelihood or merely passing their time. The conception of the work is good, and if all the information given is as accurate as that in the sections dealing with questions of which we have personal knowledge, the book as a whole must be a thoroughly reliable guide.

THE issue of the *Sanitary Record Year Book and Diary*[7] for the present year is the thirtieth to appear; in effect, perhaps, it is a diary rather than a year book, and as such should admirably suit the needs of most public health officials. But the year book part of it is also well arranged, there being, in addition to a review of sanitary legislation during 1911, a variety of memoranda of a kind useful to sanitary officers.

[4] *The Surgeon's Log.* Being impressions of the Far East. By J. Johnston Abraham. London: Chapman and Hall, Ltd. 1911. (Med. 8vo, pp. 350; 24 illustrations. 7s. 6d. net.)

[5] *Letters from China, and some Eastern Sketches.* By Jay Denby. Illustrated by H. W. G. Hayter. London: Murray and Evenden. (Post 8vo, pp. 438; figs. 21. 6s.)

[6] *The Englishwoman's Year Book and Directory.* Edited by G. E. Mitton, with the assistance of many experts. Thirty-first year of issue. London: Adam and Charles Black. 1912. (Post 8vo, pp. 415. 2s. 6d. net.)

[7] *The Sanitary Record Year Book and Diary.* Published by the Sanitary Publishing Co., Fetter Lane. (Med. 8vo. 2s. 6d. net.)

ANTIMOSQUITO MEASURES IN INDIA.

THE second meeting of the General Malaria Committee, held in Bombay on November 16th, 1911, and two following days, was attended by some thirty members and delegates. The main purpose of the committee is to study the measures which should be taken to mitigate malarial fevers in India.

PRESIDENT'S ADDRESS.

Sir C. P. Lukis, K.C.S.I., Director-General, I.M.S., and Acting Sanitary Commissioner for the Government of India, who presided, opened the proceedings by an interesting review of the work recently done in India and of investigations which should now be undertaken.

He first, however, made a sympathetic reference to the untimely death of the late Lieutenant-Colonel Leslie, Sanitary Commissioner with the Government of India. His loss, Sir C. P. Lukis said, would be deeply felt, not only by members of the committee, but by all interested in the cause of sanitation in India and the Far East.

Special Malaria Classes.

Sir C. P. Lukis then referred to the recent change in the method of selecting officers to attend the malaria classes at Amritsar. Under the new arrangement it would be possible for any officer, who was seriously desirous of studying malaria, to gain admission to one of the classes, and it was hoped that ere long this would result in a large number of competent and keenly active workers being spread over the country—a result that could not fail to bring about a great increase in knowledge, not only of malaria, but of other closely allied diseases, especially those of the "Leishmania" group.

The Indian Research Fund.

It was hoped with the aid of the new Indian Research Fund to carry out many investigations which hitherto for financial reasons had been outside the bounds of practical politics.

The first inquiry which would be undertaken at the expense of this fund had already been commenced, namely, an inquiry into the methods by which yellow fever might be prevented from entering Indian ports, and might be stamped out should it ever succeed in obtaining a footing. The danger of its introduction, which might arise on the opening of the Panama Canal, had recently engaged the serious attention of the Government of India, and it had been decided, in consultation with the Secretary of State for India, to depute Major James to the endemic area by way of the route that would be followed by ships proceeding to India when the canal was opened. The assistance of the Research Fund would, it was expected, be obtained for two other inquiries. The first was the institution of malariometric investigations, for which work the Central Committee considered it desirable to have at least one worker who could devote his whole time to the development of malariometric methods and their application to the study of Indian malaria. Such a worker it was hoped to obtain with the assistance of Sir Ronald Ross. The second was an inquiry into the bionomics of *Anopheles*, in connexion with which it was hoped to secure the help of Professor Howlett.

The Value of the Study of Species of the Anopheles.

Sir C. P. Lukis then contined as follows: I now turn to two very important contributions to our knowledge which have been made during the past year. The first is the publication of Dr. Bentley's admirable report on the causes of the recent malarial outbreak in Bombay, which has confirmed Major Liston's original observations incriminating *Neocellia stephensi* as the carrier of malaria in this city; and which suggests that malaria can not only be reduced, but it can be absolutely eradicated from the greater part of Bombay at a cost which would amount to less than a tenth part of the loss estimated to be occasioned each year by the disease. The second contribution is a report which has just reached me from Major Christophers, who was sent to investigate the causes of malaria in the Andamans. The first thing that struck him was the remarkable fact that a large number of villages were quite free from malaria, in spite of the fact that many of them were surrounded by riceland, swamp, or jungle, whereas others showed a considerable amount of malaria, the spleen-rate varying from 25 per cent. to 50 per cent. Eventually it was noted that what determined the healthiness or unhealthiness of a village was its proximity to the sea. Villages near the sea were invariably malarious; those remote from the sea healthy. Even a distance of half a mile from the sea was sufficient to ensure the endemic index being 0 per cent. This distribution of malaria was shown by actual measurement to be exactly coincident with the occurrence of a parteiular species of *Anopheles*—namely, *Pseudomyzomyia ludlowi*—which appears to breed chiefly in salt swamps and brackish water, and which is undoubtedly the chief malaria carrier in the Port Blair Settlement.

Now, so closely does this mosquito, on casual examination, resemble *N. rossi*, that, with reference to these two species, Professor Eysel has remarked upon the folly of too nice distinctions in regard to the species of *Anopheles* and the transmission of malaria. Yet the existence of two distinct, though closely related, species of *Anopheles* is the explanation why, in the Andamans, the proximity to ricelands and swamps is innocuous, provided that these are at a distance from the sea.

The Value of Antimosquito Measures.

These observations of Bentley and Christophers show, I think, the value of investigation, and how important is the study of species when one is concerned with the spread of malaria by *Anopheles*; but, gentlemen, they do more than this, they justify the hope that the adoption of antimosquito measures in India must not prove either such an expensive or impossible task as some would have us believe.

Here I should like to say that I view with concern the tendency amongst malaria workers to divide up into two camps—namely, those who advocate antimosquito measures and those who pin their faith on quinine prophylaxis. In this connexion I would draw your attention to a speech which I made before the Imperial Malaria Conference in 1909, when, after pointing out the almost insuperable difficulties connected with quinine prophylaxis as applied to a free population, I went on to say that, whilst agreeing that quinine prophylaxis, properly carried out, was one of the most valuable weapons in the fight against malaria, and whilst admitting that in rural areas it might be the only weapon at the disposal of the Government, I felt bound to express my opinion that, if they were to place sole reliance on this measure in Indian villages, they were doomed to disappointment. Quinine prophylaxis should go hand in hand with general sanitation and with the destruction of *Anopheles* breeding grounds whenever this can be accomplished at reasonable expense, and it seems to me that recent observations justify us in thinking that this destruction is not likely to be as costly as has hitherto been supposed. Quinine has undoubtedly conferred inestimable benefits upon the individual, but it never has and never will be of equal value to the community as a whole, and you cannot get away from the fact that if there were no mosquitos there could be no malaria. I fully realize that in some of the hyperendemic areas mosquito destruction may be a counsel of perfection, but even there much good may be done by reducing the numbers of the special species which acts as the carrier, and, I ask you, should we halt in our activity because we cannot attain to an ideal perfection? I recognize the fact that no one method will suffice as a general *anti*malarial measure; I recognize the power of each in its proper place, but I hold strongly that wherever possible mosquito *anti*measures must be carried out. I also recognize the importance of preliminary investigation, but it must not be carried to extremes. The time has come for definite action on well considered and practical lines.

It must be remembered that there is a limit to the number of men available for carrying out such thorough investigations; also that such investigations occupy much time, so that before they are completed the acute situation may have declined and the psychological moment for action may have passed away—not to occur again until the next epidemic. I wish it to be clearly understood, therefore, that I do not think we can depend upon scientific research alone. For this opinion there are two very good reasons. In the first place I hold that, in many cases, actual operations may with advantage be carried out in conjunction with investigation. Indeed, I consider that,

in certain instances, the former may be the only method of investigation. We are dealing with a vast complex of factors, and the elimination of one or more of these may be the only practical way of solving the problem.

Again, from the point of view of the limited resources at our disposal, as compared with the large amount of malaria with which we have to deal, I submit that if we wait until our experts have made a complete investigation of all the problems connected with the epidemiology and endemiology of the disease, there is the danger that India will remain for many years practically untouched. We require, then, two classes of men—the scientific experts and the practical workers—the former engaged in research and ready to aid the latter when in difficulties—and the latter trained in the taking of spleen indices and in the recognition of the commoner varieties of *Anopheles*. It is not necessary that they should be able to dissect them. Men trained to this extent would be quite capable of mapping out the geography of an epidemic and that of the mosquito breeding places in the neighbourhood of the infected area, and of noting the types of mosquito found therein; and from the data furnished by them it ought not to be difficult to ascertain the actual carrier and to work out a definite scheme of attack.

I trust, gentlemen, that no delegate will think that I wish to imply that nothing has been done in the past. This is very far from my intention. I merely wish to express my opinion that we are perhaps too much inclined to pin our faith entirely on the scientific investigator to the detriment of the practical worker, and my reason for bringing this forcibly to your notice is that we are, at the present moment, fortunately situated as regards malaria. We have narrowly escaped a year of famine, and, owing to the deficient rainfall, we are justified in hoping that, unless circumstances of an unexpected nature arise, we shall not be visited by a severe epidemic of malaria during the coming year. We have, therefore, ample time in which to prepare our plan of campaign.

Diseases of the "Leishmania" Type.

I alluded just now to the diseases allied to malaria, especially those of the "Leishmania" type. There are several points in connexion with these which require further investigation.

As you are all aware, the genus Leishmania at present comprises three species:

L. donovani—the parasite of kala-azar.
L. tropica—the parasite of Oriental sore.
L. infantum—the parasite of infantile splenomegaly in N. Africa.

The points in connexion with these, which in my opinion require further investigation, are as follows:

1. *The Possible Antagonism between Oriental Sore and Kala-Azar.*—So far as I am aware, the evidence in favour of this view is chiefly geographical in nature, and it appears to me that we should endeavour to obtain more accurate and scientific evidence on this point, which is one of more than academic interest; for, if the antagonism is proven, there ought to be no difficulty, on the analogy of vaccinia and variola, in utilizing our knowledge and in immunizing patients against attacks of kala-azar by inoculating them with the milder disease.

2. *The Rôle of the Domestic Fly as a Carrier of Oriental Sore.*—Both Wenyon, as the result of his work in Baghdad, and Row, in India, regard this insect as the carrier. On the other hand, Patton, as the result of his recent observations in Cambay, is inclined to incriminate the bed bug. Further investigations on this point are clearly necessary.

3. *The Question of the Carrier of Kala-Azar.*—It is generally understood, though it is by no means proven, that the bed bug is the carrier in this case. On the other hand, Nicolle regards the dog as the reservoir of the parasite which causes the infantile kala-azar of North Africa, and both he and Basili have proved that the parasite is carried from dog to dog by the dog-flea, and he suggests the possibility that it may be conveyed from dog to man by the same means. So far as I know, dogs in India have not been found to be infected with *L. donovani*, and I believe that all attempts to infect dogs with it have failed; but I submit that a much more extensive examination of dogs in kala-azar districts in India would seem to be indicated.

Need for Investigation of the Distribution of Various Species of Mosquitos.

Finally, gentlemen, let us not forget the possibility of the importation of yellow fever into India. Major James has gone to Panama to study the methods of keeping it out of the country, but that is no reason why we should sit with folded hands waiting for its arrival.

In this connexion I invite your attention to the following quotation from the admirable report on the recent outbreak of that disease in West Africa, which was almost the last piece of work done by the late Sir Rubert Boyce, whose untimely death we all deplore:

> Much more attention will require to be paid to the Stegomyia and to the fevers met with in towns where the Stegomyia is the most common mosquito. Medical officers will require to be as alert to the possibility of yellow fever as they are in the West Indies or in Central America. Nay more, it is essential to ascertain definitely what is the prevailing mosquito of all principal centres of population, and the inquiry might at this stage with advantage be extended to other parts of the tropical empire, such as India and the East Indies.

This is sound advice. Think what a difference it might have made if in 1894 we had known as much about the rat-flea and plague as we now know about the Stegomyia and yellow fever. It behoves us, therefore, to be up and doing. The Central Malaria Committee has not neglected its duty in this respect; we have already more than forty-two species of Culicine mosquitos, including six species of Stegomyia, in the museum attached to the Malaria Bureau, and in order to advance the work still further we are bringing up to date the pamphlet of instructions to collectors, emphasizing in it the present necessity for collecting Stegomyias and other Culicine mosquitos, and we are making arrangements to distribute it even more widely than is done at present.

I trust that all of you will do your best to help us in this matter. But do not be content merely with a mosquito survey; lose no opportunity of preaching a crusade against the mosquito, both in its sylvan and domestic varieties. The work of Sir Ronald Ross has demonstrated the danger of Anopheline as carriers of malaria; we now know that domestic mosquitos of the genus Stegomyia may prove an even greater danger in the immediate future. Even though the complete eradication of mosquitos, therefore, may be a counsel of perfection so far as India is concerned, it is our bounden duty, whenever practicable, to endeavour to lessen their numbers and to educate the public in such a way that the efforts of Government may be supplemented by individual endeavour. Unless this be done, it is useless to expect that our campaign against malaria will ever be crowned by success.

DISCUSSIONS.

The subsequent proceedings of the committee included the reception of brief reports of the arrangements for investigating malaria in the different provinces.

Dr. Bentley opened a discussion on antimalaria measures by giving an account of a partial survey of Bombay, showing that wells and cisterns were the chief objects of attack. He advised that the former should be filled in and the latter closed, and estimated that the expenditure of one lakh of rupees would render innocuous 60 per cent. of the permanent breeding places. Colonel Lyons expressed the opinion that the use of quinine was a measure for the individual, and difficult to enforce even among troops. On the other hand, the investigations of breeding places and a gradual expansion of antimosquito measures ought to be adopted throughout India. Sir David Semple, while not prepared to advocate antimosquito measures everywhere, was convinced that in many places in India conditions were favourable for mosquito destruction, and was glad that so much prominence was being given to this policy. Major Robertson said that "quininization" as a general measure was doomed to failure, and cordially agreed with the statement of the President that the psychological moment had arrived for antimosquito measures.

Dr. Rutherford (Ceylon), who had had fourteen years' experience in West Africa, said that it was there illegal for any one to have standing water or pools in their grounds, and every one was required to keep wells covered. There

was an organization of district inspectors and local village headmen, breeding places were mapped out, the natives taught to recognize mosquitos, and subsidies given to villages where internal sanitation was carried out satisfactorily. Several speakers referred to the necessity of imposing on the railways of India the duty of not leaving trenches in which water accumulated and remained.

Several speakers referred to investigations which seemed to show that severe mortality from malaria was associated with extreme poverty; and Major Lalor gave an account of Italian experience which seemed to prove that intensive cultivation tended to diminish malaria, even though the related mosquitos should continue to infest the locality.

RESOLUTIONS.

On the second day of its meeting the committee adopted the following resolutions, proposed by Surgeon-General Bannerman:

1. This Conference is of opinion that researches by experts in the field, such as those carried out by Christopers and Bentley, prove the value of preliminary scientific investigation, and seem to point to the probability that anti-mosquito measures may not prove so costly as was at one time feared.
2. The Conference believes that no one measure can be suitable for all the conditions that favour the prevalence of malaria; that quinine prophylaxis applied to a free population is difficult to carry out in the thorough way necessary for success; and that a combination of several measures may be required as local circumstances may indicate. The Conference is of opinion that, notwithstanding the difficulties of quinine prophylaxis, it cannot be too strongly emphasized that, under the peculiar conditions of the Indian populace, arrangements for the treatment by quinine of those sick from malaria is a matter of primary importance from the point of view of saving life, of preventing suffering, and of destroying a potent source of infection.
3. The Conference desires to call the attention of Government to the possibility of danger arising from borrow pits in the proximity to human habitation, especially when such excavation would result in stagnation of water therein.
4. The Conference is of opinion that education of the people is a most important antimalarial measure, and that every effort should be made to secure the co-operation of the public, without which there is little hope that the campaign against malaria will ever be crowned with success. They believe that instruction in schools as well as lectures and lantern demonstrations in villages and towns are the best methods of propagandism, and that in this way information is more likely to reach the people than by the publication of pamphlets and posters.
5. The Conference, while strongly recommending the prosecution of further research, is of opinion that, although expert investigation is still necessary, enough is known as to the breeding habits of mosquitos, etc., to make it frequently possible for trained workers to deal with malaria in an efficient manner.
6. In view of the possibility of the importation of yellow fever into India, the Conference suggests the advisability of a careful "Stegomyia" survey and of the education of the public in the matter of destruction of domestic mosquitos.

The resolutions were carried unanimously. The Conference then closed.

MOTOR CARS FOR MEDICAL MEN.

FORD CARS.

DR. T. SHANASY (Nhil, Victoria) writes: Several correspondents have asked about the above. I have been running a 20-h.p. two-seated model, and am well pleased with it. I previously had a twin 10 to 12-h.p. of a famous make, which cost half as much again, was heavier, and needed, I think, more attention. The Ford is a distinct proposition of its own, as, for instance, the magneto, the springing, the petrol control, the gearing; much simpler to drive than those of the sliding gear variety. Where there are metal roads 30 miles to the gallon of petrol should be done; but in this district we have only tracks, with stretches of sand, so I run only 20 miles to the gallon. A year's experience of the Ford and 2,900 miles on it are the basis of my experience. The back tyres began to peel near the head, so my saddler sewed sheepskin leather all around both sides, head to beginning of tread, for 16s. each tyre. I carry them as spares. The front ones seem the same as when I got her. It is wonderful how complete they turn them out—the accessories, lamp, speedometer being first-class. The radiators need some brass clamping for sides—done for a few shillings. Engine knocks quickly unless the spark is retarded at once before rounding corners, taking sand, reducing speed for the washaways one meets ascending hills. The upholstering is only fairly good, but look at the price asked—£275 here. Will someone say whether the Atlas metal disced tube protectors become hot and affect the tube?

THE INSURANCE COMMISSIONS.

THE JOINT COMMITTEE.

THE Lords Commissioners of the Treasury have appointed a Joint Committee of the several bodies of Insurance Commissioners under Section 83 of the National Insurance Act, as follows:

Chairman: Charles Frederick Gurney Masterman, Esq., M.P.

Vice-Chairman: Sir Robert Laurie Morant, K.C.B.

The Chairmen for the time being of the several bodies of Commissioners, *ex officio* members of the Committee:

James Smith Whitaker, Esq., M.R.C.S., L.R.C.P.

John Swanwick Bradbury, Esq., C.B.

The Chief Registrar of Friendly Societies.

Sir John Struthers, K.C.B.

The name of a woman member of the Joint Committee will be announced at a later date.

The Joint Committee have appointed Mr. W. J. Braithwaite, Assistant Secretary of Inland Revenue, to be Secretary, and Mr. A. W. Watson, F.I.A., to be Chief Actuary to the Committee. Mr. Masterman has appointed Mr. J. A. Salter to be his Private Secretary for National Insurance work.

The first meeting of the Joint Committee was held at the Treasury on Saturday, December 30th.

THE NATIONAL BOARDS OF INSURANCE COMMISSIONERS.

The appointment of the several bodies of Commissioners for England, Scotland, Ireland, and Wales is also officially announced as follows:

England.

Chairman:
Sir Robert Morant.

Deputy-Chairman:
Mr. J. Smith Whitaker.

Commissioners:
Mr. J. S. Bradbury,
Mr. D. J. Shackleton,
Mr. J. Lister Stead,
Mr. Thomas Neill,
Miss Mona Wilson,
The Chief Registrar of Friendly Societies.

The Board of Commissioners for England has thus been completed by the appointment of Mr. Thomas Neill. Mr. Neill has been engaged in insurance work, beginning as an agent, and becoming successively district manager, inspector, and ultimately general manager of the London, Edinburgh, and Glasgow Assurance Company, a post he held for sixteen years. When that company was transferred to the Pearl Life Assurance Company, Mr. Neill became one of the directors to the latter. It is stated that he was one of the founders of the Association of Industrial Assurance Companies and Collecting Friendly Societies.

Scotland.

Chairman:
Mr. James Leishman.

Deputy-Chairman:
Dr. John Christie McVail.

Commissioners:
Mr. J. McNicol,
Miss Mary Muirhead Paterson,
Chief Registrar of Friendly Societies.

Ireland.

Chairman:
Mr. Joseph Aloysius Glynn.

Deputy-Chairman:
Mr. W. S. Kinnear.

Commissioners:
Dr. W. J. Maguire,
Mrs. Marie Louise Dickie,
Chief Registrar of Friendly Societies.

Wales.

Chairman:
Mr. T. J. Hughes.

Deputy-Chairman:
Dr. H. Meredith Richards.

Commissioners:
Mr. J. Rowland, M.V.O.,
The Hon. Violet Blanche Douglas-Pennant,
Chief Registrar of Friendly Societies.

THE COMPOSITION OF CERTAIN SECRET REMEDIES.*

"ELIXIRS OF LIFE."

IN a report published in the JOURNAL of January 7th, 1911 (p. 26), an account was given of the results of the examination of "Squarine," which appeared to consist of the "orchitic fluid" proposed by the late Dr. Brown-Séquard. Two other preparations which show strong affinities to "sequarine" are now being largely advertised, and we give here an account of the analysis of samples of these obtained from the vendors in the usual way.

NEUROVRIL.

The preparation known as Neurovril is supplied by the Neurovril Company, London, W. The price is 21s. per bottle, "sufficient for one month," or 7s. 6d. for a smaller bottle, "sufficient for one week." The smaller bottle was found to contain nearly 8 fluid ounces. An advertisement, occupying the space of a column in a London daily paper, is headed, in large letters,

HAS THE ELIXIR OF LIFE BEEN DISCOVERED?
Amazing Results of Great Health Discovery announced To-day.

And the first paragraphs are as follows:

There is announced to-day a mysterious serum, which, whilst according relief in cases of severe illnesses, apparently, from the statements made, actually introduces into the body not a mere stimulating force, but life itself. Although the discovery has been made by a Continental scientist, he has already sent particulars to his confrères all over the world, and so important do British scientists consider this matter, that they are making every effort to place the information at once in the hands of those who are ailing.

The amazing successes that have attended the application of this wonderful new health discovery have aroused on all hands the question: "Has the Elixir of Life at last been discovered?"

After much more of the same sort, it continues:

The new serum is a new food for use in cases of

Loss of Memory,	Melancholia,
Headache,	Irritability,
Exhaustion,	Slackness,
Nervous Weakness,	Nervous Prostration,
Brain Fag,	Partial Paralysis.

It is a blood food for use in cases of

Anaemia,	Impoverished Blood,
Rheumatism,	Kidney Troubles,
Sciatica,	Disordered Liver.

It is a physical food for use in cases of

Wasting Tissue,	Thinness,
Lack of Muscular Vigour,	Aged Appearance,
Weak Back,	Premature Decline.

The wonderful result after even the first dose will be a delightful sensation to those who have long lost the vigour of full manhood or womanhood.

A booklet is sent on application, from which the following passages are quoted:

When it is said that old men and women are made young, that the decrepit take on a new virility, that the yellow-hued cheeks assume the roses of youth, and the worn out brain gains new power to think and control action—these are facts beyond all disputing.

The great new basic serum makes it possible to defy the approach of age, and, better still, enables men and women to come back from the realms of senile decay and continuous illness to the vigour of perfect man and womanhood. Tissue by tissue, new flesh, new energy-creating cells are formed, and as the basic serum is absorbed into the system, throughout the whole body is carried on a work of rejuvenation. . . .

Realising the inutility of conducting investigation on stereotyped lines, elaborate search was made for a new idea, and in a most singular manner the secret that proved the keynote of our scientist's success was found. His work involved ceaseless laboratory experiments through the realms of organic chemistry and physiological science, and demanded abnormal patience. . . .

Further experiments proved that the new basic serum not only supplied vitality and strength to the body, but could be prepared in such a way as to prove an anti-toxin, a means of resisting and curing illness. . . .

To say that Neurovril contains protoplasmic life is no rash assertion; it is a perfectly true statement proven by exhaustive laboratory tests.

Teeming with millions of life centres, every drop of Neurovril introduced into the body effects a wonderful change. The life centres develop and give up their energy to the body. . . .

The following appears on the label:

Analysis of Active Principle:

75 per cent.	phosphates, immediately assimilable	
20 ,,	albumen, remarkable for creating virility	
2 ,,	carbonate calcic	
3 ,,	water	Total = 100 per cent.

The directions are:

Take of this Tonic, regularly, half of a Neurovril glass (supplied with this bottle) night and morning directly after meals.

"Half of a neurovril glass" is about 5 fluid drachms. Analysis showed that 100 parts (by measure) of "neurovril" contain 18.9 parts (by measure) of alcohol, and gave 19.1 parts of residue on evaporation, of which 18.1 parts consisted of sugar. A trace of oil of cloves was present, giving a slight clove odour, and a faint odour like that of animal tissue in a state of incipient decomposition could also be detected.

The liquid was slightly turbid, and a trace of fatty substance was present. No appreciable amount of "serum" or other animal substance was present; only the slightest indication of a trace of nitrogenous matter could be detected, this being of the nature of an organic base, and the amount of phosphate was so small that it was doubtful, even with a very delicate test, whether any at all were present. The total ash was 0.03 per cent., and it contained a little lime. The 1 part per 100 fluid parts which was not sugar was probably chiefly glycerine, but a small quantity of glycerine in presence of a large quantity of sugar can hardly be positively identified by examining a reasonable quantity of the material.

If the "active principle" contains, as stated on the label, 75 per cent. of phosphate and 20 per cent. of albumen, it follows from the analysis that only a minute trace of it is present in the liquid, which is practically a mixture of simple syrup and diluted alcohol.

OSOGEN.

Osogen is supplied by the Osogen Company (L. F. Williams and Co.), London, W.C., at 2s. 9d., 7s. 9d., and 11s. a bottle. A bottle price 2s. 9d. was found to contain 1 fluid ounce, and a bottle price 11s. 5 fluid ounces.

An advertisement, occupying the space of a column in a London daily paper, is headed:

MYSTERIOUS SERU-PHOS. Amazing Elemental Combination Startles Scientists. More Effective than the most powerful Serum.

Some extracts from it are:

Scientific discussion is at present rife anent a mysterious new combination of organic elements. Some time ago Professor Brown-Sequard, F.R.S., F.R.C.P (formerly head of Queen Square Hospital, London), discovered a serum (Sequard Fluid) which was used with success in treating various ailments. Another eminent scientist has now discovered that by combining this serum with organic reconstituent elements its curative value is more than doubled. After Professor Brown-Sequard announced his discovery to the Paris Biological Society, Professor Prince Tarkanhov (St. Petersburg) and other scientists began experiments with the serum, and hence the new remedy is a direct product of the labour and learning of some of the greatest scientific men of their age. This seru-phos combination (called Osogen) has been pronounced absolutely certain in curative effect and more swift in action than the most powerful serum used alone. Scientists who investigated it were amazed by its wonderful potency, and Physicians, both in London and on the Continent, predict that Osogen will supersede many other forms of treatment. . . .

Osogen is not a secret remedy. It is a vital extract ($C_2H_5N_1$), combined with organic reconstituent elements (glycerophosphates), all of which are now recognized by the Medical Profession, and appear in Pharmacopoeias throughout the world. One of the ingredients has been called by famous scientists "more powerful than the interchange of blood." The whole is almost an exact replica of the elements which combine to form the human economy. The vital extract increases disease-fighting corpuscles, another constituent forms nerve cells (especially cells of the Spinal Nerves), another forms tissue cells, etc. Its action is restorative in every part of the body,

* Previous articles of this series were published in the following issues of the BRITISH MEDICAL JOURNAL: 1904, vol. ii, p. 1585; 1906, vol. ii, pp. 27, 1645; 1907, vol. i, p. 213; vol. ii, pp. 24, 160, 209, 393, 530, 1653; 1908, vol. i, pp. 833, 942, 1373; vol. ii, pp. 86, 505, 1022, 1110, 1193, 1285, 1566, 1697, 1875; 1909, vol. i, pp. 31, 909, 1128; vol. ii, p. 1419; 1910, vol. i, pp. 151, 213, 393, 1005, 1063, 1120; vol. ii, pp. 982, 1350, 1928; 1911, vol. i, pp. 26, 91, 823, 1324; vol. ii, pp. 32, 77, 456, 767, 854, 1543. Analyses are also to be found in *Secret Remedies* (chapters i and ii). London: British Medical Association, 429, Strand. Price 1s., post free 1s. 3d.

and its use is especially recommended in cases where the serum alone has not effected a thorough cure.

In a small pamphlet enclosed in the package, "Osogen" is described as

Serum and Glycerophosphates. A Natural Remedy for Neurasthenia, Nervous Disorders, Brain Fag, General Debility, Anaemia, Bright's Disease, Influenza, Sciatica, Functional Weakness, Loss of Vital Power, Indigestion, Dyspepsia, Rheumatism, Kidney Disease, Dropsy, Diabetes, Asthma, Consumption, Locomotor Ataxy, and Paralysis.

The directions on the label are:

20 to 30 drops in a wineglass of water after meals three times daily. Children over six: 5 to 15 drops as above.

Analysis showed the liquid to contain glycerophosphates of iron, magnesium, sodium and quinine, a little alcohol and a trace of chloroform, with glycerine in large quantity. Not more than a trace of nitrogenous matter was present in addition to the quinine, showing that if the mixture contained any of Brown-Séquard's Orchitic Fluid, the amount was very small. Determination of the quantities of the various ingredients gave the following formula:

Quinine glycerophosphate	...	0.75 part
Iron glycerophosphate	...	2.14 parts
Magnesium glycerophosphate	...	0.77 part
Sodium glycerophosphate	...	0.90 ,,
Spirit of chloroform ...	...	3.8 parts by measure
Glycerine	...	73 ,, ,,
Water to	...	100 ,, ,,

LITERARY NOTES.

THE sixteenth volume of the second series of the *Index Catalogue of the Library of the Surgeon-General's Office, United States Army*, has recently been issued. It carries the vocabulary from "Skinko" to "Stysanus."

In the JOURNAL of December 30th, 1911, we had something to say as to pedantry in plurals. It was, therefore, with amused interest that we saw it pointed out in the *Observer* of December 31st, 1911, that "one perceives in the cables from Nepal an inclination to shirk the question of the plural of 'rhinoceros.'" Our contemporary goes on: "To say that the King 'shot thirty tigers and thirteen rhinoceros' is simply disingenuous, for you cannot make 'rhinoceros' a collective word like 'grouse,' at once singular and plural." "Why not," asks the writer in the *Observer*, "boldly 'rhinoceroses'?" Exactly; that is just the teaching we meant to convey. A recent correspondent in the *Times* has suggested the use of "rhinocerotes," which is good Greek but in our opinion bad English. Since our note appeared we have heard that a surgeon at a great London hospital speaks of "diverticulae"; this is a worse offence, for it is neither Latin nor English. A solecism similar in kind though opposite in substance is the use of "phenomena" as a singular. The offender in this case was a physician of the highest eminence writing in a contemporary

On the same subject Dr. J. E. Sandilands of Kensington writes:

May I suggest that in the article on the above subject which appeared in the BRITISH MEDICAL JOURNAL of December 30th, one of the most forcible arguments against the use of the Latin plural for the word "sanatorium" has been omitted, since no reference is made to the fact that the word itself is not to be found in the Latin language. The first syllable, provided it be pronounced long, occurs in the substantive sānitas, but for the remaining four syllables Dr. W. Smith's dictionary offers no vestige of authority.

Under these circumstances the Académie Française would appear to have been in a holiday mood when they decided with mock solemnity that one of the least justifiable pseudo-Latin words in medical terminology should not be allowed to perpetrate the added fraud of assuming a Latin suffix to denote the plural number. In the same article mention is made of a "very superior person indeed" who could not bring his lips to frame such a plural as serums. It would be interesting to know whether the same fastidiousness led this gentleman to speak of sānitary arrangements and sēra, or whether he vulgarly asked for sērum and trusted that the chemist would know too little of Latin to call for orders "at a late hour," instead of sending a phial of antitoxin.

Such a word as "sanatorium" would, we suppose, have made Quintilian stare and gasp. All the same the unclassical word is often seen bedizened with a classical plural which is singularly (we beg pardon for the accidental pun) out of place. The existence of the word itself, however, is justified by its necessity. In regard to the quantity of the first syllable of serum, Dr. Sandilands is doubtless correct. But the time is long past when Sydney Smith said that a false quantity perpetrated early in life was sufficient to wreck a promising career. Not very long ago a schoolmaster was laughed at in a court of law when he insisted on pronouncing bona fide as "*bonna fidde*." Even in the groves of Academe the classical length of a syllable seems now to be regarded as a negligible quantity. The other day when some young men were presented for the degree of B.M. at Oxford there was some talk beforehand as to the correct pronunciation of the first words of the oath they were to take, "Do fidem." An "old hand" assured them they need not be particular, "for we don't bother much now about quantities at Oxford." As if to confirm his words, immediately afterwards the proctor, reading out the words of the oath, said "Do fīdem."

Another question of quantity is raised in the following letter from Dr. Henry Hick, of New Romney:

I have waited for my opportunity, and surely now it has come. I have read with interest your article on plurals. May I suggest that "Sauce for the goose is sauce for the gander," and that what applies to plurals applies equally to pronunciation?

You say, "If we adopt words . . . we should give them full rights." Your red rag, "enēma," has long been an English word, and to say because it is Greek we must give up the classical English pronunciation is as bad as to say we must use Greek plurals. All the old dictionaries and universal usage in the past point to the long second "e." When I wrote before you asked why the pronunciation should provoke such strong comment. Well, I heard the new pronunciation at the same time that the expressions, "Hot the water," "Certificated nurse," "Bath the baby," etc., came into use, and one is judged by the company he keeps.

Dr. Hick has waited a long time for his opportunity; but we cannot help thinking his patience has been exercised to little purpose. We do not know why he should say that "enēma" is a red rag to us. In 1896 there was a little correspondence in the JOURNAL on the pronunciation of the word, and we took occasion to point out that besides the fact that the word actually used by the Greeks was *ἔνεμα*, the pronunciation, "enēma," is given in the *New Sydenham Society's Lexicon of Medicine and the Allied Sciences;* by Gould in his *Illustrated Dictionary of Medicine;* by Hoblyn in his *Dictionary of Medical Terms* (edited by J. A. P. Pryce); by Foster in his *Illustrated Encyclopaedic Medical Dictionary;* by Dr. J. S. Billings in the *Natural Medical Dictionary;* by Wagstaffe in his edition of Mayne's *Medical Dictionary;* by J. Thomas in his *Pronouncing Medical Dictionary;* also by Dunglison and Dulane in their lexicons. The *New English Dictionary* (Oxford) the most recent, as it is the best, authority we have, gives both pronunciations, "enēma" having the place of honour; the following note is added: "The normal pronunciation is ē-nīmă, but the incorrect form is in very general use." We should not have given the certificated nurse, who would seem to be Dr. Hick's "red rag," the credit of having set the doctors right in a matter of pronunciation; and as a matter of historical fact at the medical school—one of great fame in these far-off days, by the way—where we played the part of idle apprentice, enēma was most frequently used though enēma was tolerated. We are all inconsistent in these matters. Who says parēsis or angīna, though these are the correct quantities? We hear men of great repute speak of electrolysis; why do they not say paralysis? We have heard trachēa and chorēa from the lips of eminent physicians. Most of us on this side of the Atlantic say vaginal, but only the half educated say urīnal. Americans, however, speak of the abdomen and the umbilicus; and we have a vivid remembrance of our modesty receiving a shock (we were young then) at a demonstration of an irrigator by a fair lady of New York in the presence of her husband, a well-known specialist, when she indicated what she called the vaginal tube. Other iniquities attributed to the certificated nurse by Dr. Hick are the use of "bath" and "hot" as transitive verbs. Both forms have good authority in their favour, as he will see if he will look into the *New English Dictionary* (*sub vocibus*), though "hot" is described as ("now *colloq.* or *vulgar*"). This admission may be comforting to Dr. Hick's bruised grammatical spirit.

The rules of pronunciation, as those of grammar itself, rest on custom—that *usus* which, as Horace says, is the

jus et norma loquendi. To return to "enema," we repeat what we said in 1896, that it is clear the Greeks pronounced it with the middle syllable short; and we think those who would pronounce it otherwise may reasonably be asked to show cause why they should not also speak of ictērus and cholēra. But if any freeborn Briton insists in speaking of enēma, or for that matter of eczēma, there runs not in these realms, as far as we are aware, any writ to the contrary.

Nova et Vetera.

THE FOLK-LORE OF THE UMBILICAL CORD.

IN Scotland there are various beliefs which centre round the umbilical cord as regards its power of affecting the genito-urinary organs and the general health of the newborn child. It would be interesting to find out through the medium of the BRITISH MEDICAL JOURNAL how far these and similar ideas prevail in Britain.

At the time of birth when the cord is cut great care must be taken not to cut it too short if the child be a male, as in such a case he will in adult life run the risk of being childless. If a good length of cord is left the child will have a long penis, suggestive to the folk of procreative power. If, on the other hand, the child be a female the cord should be cut short, thereby securing for it in adult life a narrow vulva, suggestive to the popular mind of retention of the male element, and consequently of fertility.

But this latter operation can be overdone. In a curious collection of miscellaneous "information," originally published in London in 1595,[1] we find it laid down that

> As soon as the child is born—especially a boy—there ought to be great heed taken in the cutting of the Navel String; for the Member of Generation doth follow the proportion of the Navel String; and if it be tied too short in a Wench it may be a hindrance to her bringing forth her child. Therefore it is meet that Midwives have a great regard therein!

Here, then, we have clearly pointed out to us the danger of overdoing what otherwise is a necessary precaution.

In Scotland there is a further belief that if the umbilical cord be tied carelessly and allowed to bleed, the child will be a bed-wetter. The compiler of *A Thousand Notable Things* varies this somewhat, for he says:

> If the navel string after it is cut do chance to touch the ground before it be burned, the same child will not be able to hold his or her water, whether night or day.

Elworthy,[2] speaking of Devonshire, bears testimony to this belief:

> The piece of the *funis umbilicus* should be taken off at the proper time and burnt; if this is not done and it is allowed to drop off naturally, especially if it should drop on the floor, the child will grow to be a bed-wetter.

He goes on to make what is obviously a reference to the connexion between the cord and the genital organs:

> Much more might be said as to the reasons given for the careful attention to this operation, especially as to the different treatment of a boy and a girl.

The number of "knots" on the umbilical cord of a first-born child is held to foretell how many of a family the mother is to have; divination and augury being thus added to the power of the navel string in addition to sympathetic effect.

In Lincolnshire[3] it is believed that the navel string should be carefully kept by the child's mother, just as some hold that a caul should be kept, otherwise harm will accrue to the child. And, to quote *A Thousand Notable Things* again, we find that "a piece of a child's Navel String, worn in a ring, is good against the Falling Sickness, the pains of the Head, and of the Collick." Later on in the book the cure is repeated, with the emendation that the "Navel string must be so borne as to touch the skin." Salmon[4] tells us that

> a drop or two of the blood of the Navel String being first given to a new-born Child in a little Breast milk prevents the Falling Sickness, Convulsions and all other Fits; and very wonderfully revives it almost dead.

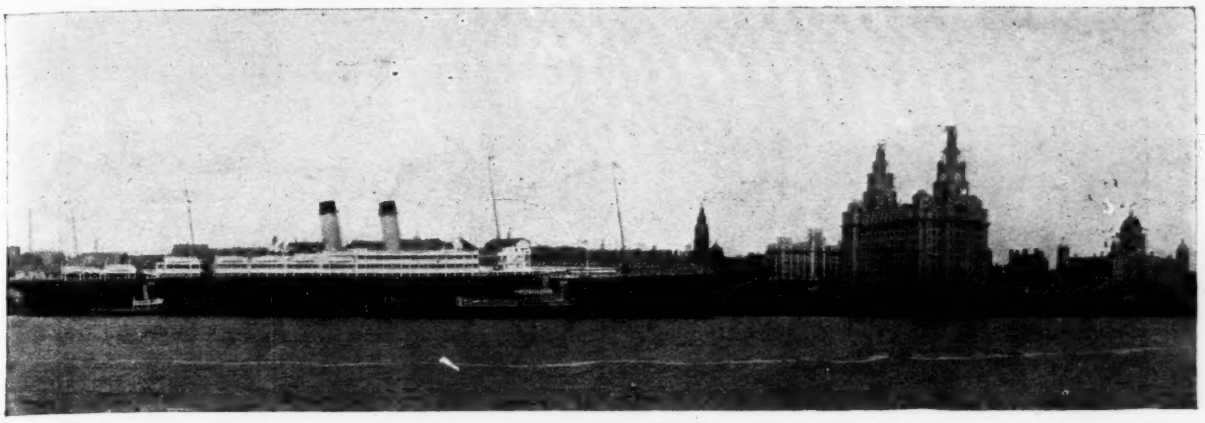
This belief that the umbilical cord has a sympathetic connexion with the child, and that what is done to it produces a corresponding effect for good or ill on the child, is common in various parts of the world. Frazer[5] tells us that in Mandeling the midwife cuts the cord with a piece of a flute on which she has first blown, as then the child will have a good voice. Among some tribes in Western Australia it is held that a man swims well or ill according as his mother put his navel string in water or not. In Rhenish Bavaria the cord is kept for a while wrapped in old linen, and then cut or picked to pieces according as the child is a boy or a girl, in order that he or she may be a good workman or a skilful seamstress. The navel string of a boy in ancient Mexico was given to soldiers for burial on a battlefield in order that the boy might acquire a passion for war. So among the Indian tribes of British Columbia the cord fastened to the dancing mask of a famous dancer will make the child a good dancer; attached to the knife of a skilful carver, a good craftsman in woodwork; attached to the baton of a singing master, a good singer. And the navel string of the King of Uganda is kept with the utmost care throughout his life. Wrapped in cloth, the number of wrappers is increased with the years of the king, until it ultimately assumes the form of a human figure swathed in cloth. The custodian ranks as an important Minister of State, the bundle being from time to time presented to the king.

Hartland[6] also deals very fully with the subject. In cases of barrenness, water containing three drops from the navel of a newborn child is given in Olchowiec (Russia). Other women, especially Jewesses, are said to suck blood from the child's navel. Ukrainian women drink water in which a portion of an umbilical cord has soaked. Among some of the Roumanians in Hungary it is the custom that a barren woman eat the dried remains of the navel string and drink some of the blood. A Kamtchadal woman, who on bearing wishes to become pregnant soon again, eats her infant's navel string; while among the Maori women of the Tupo tribe certain trees which are associated in the popular mind with the navel strings of mythical ancestors have the power of making women fruitful, and until lately the navel strings of all newborn children were hung on their branches. Barren women embrace them, and according whether they embrace them from the east or west side they conceive boys or girls.

[1] *A Thousand Notable Things*. London: Printed by Edward Crowch for John Wright at the Globe in Little Brittain, 1670.
[2] *The Evil Eye*. London: John Murray. 1895. (P. 75.)
[3] *Folk Lore concerning Lincolnshire* (Folk Lore Society's Publications). London: David Nutt. (P. 226.)
[4] *New London Dispensatory*. Fourth Edition, 1691. Book II, p. 190.
[5] *The Golden Bough*. First Edition, pp. 54–55.
[6] *Primitive Paternity*, vol. i, pp. 71 and 123.

SCIENCE NOTES.

ZIMMERN AND BATTEZ have recently reported (*Arch. d'électr. méd.*, November 25th, 1911) the results of irradiations carried out upon rabbits under ether. After exposing the thyroid and exactly localizing the area of *x*-ray action, the bulbar portion being protected by means of a sheet of sterilized lead, irradiations from a tube were given for forty minutes (dose, 10 to 16 Holzknecht units; milliampèrage, 0.8 to 1). The chief symptom was an accelerated and dyspnoeic respiration, lasting for about twenty days after the experiment, and coinciding with a condition of weakness and somnolence. There were also considerable modifications of nutrition, including emaciation and anaemia. A month after irradiation, when the respiration had become normal, there were trophic troubles of the skin, the fur falling out in tufts, and what remained was brittle and lustreless. Loss of weight was clearly marked in the third month following the irradiation, and at the end of that time the animals succumbed from atrophic cachexia. The physiological analysis of the symptoms made it evident that the *x* rays had a destructive action on the cells of the thyroid and parathyroid glands. The length of time which the animals survived suggests that the disappearance of the noble elements of the gland was progressive, and that the survival was due to the persistence of the external glandules, which in the rabbit are situated on the outer side of and underneath the thyroid body. Upon these the action of the *x* rays was not directed. The radiations destroyed simultaneously the two parts of the gland, the cells of the thyroid body and the cells of the parathyroid glandules enclosed in the gland.



Liverpool from the Mersey
(Published by permission of Messrs. Littlebury Bros.)

EIGHTIETH ANNUAL MEETING

OF THE

British Medical Association

LIVERPOOL, JULY, 1912.

LIVERPOOL, PAST AND PRESENT.

By THOMAS H. BICKERTON,

Ophthalmic Surgeon to the Royal Infirmary.

(Continued from Vol. II, 1911, p. 1551.)

II.

FEATURES OF LIVERPOOL, AND CHANGES SINCE THE LAST MEETING—1883.

THOSE who have not visited Liverpool during the last twenty-nine years will require a "Guide" if they visit it in 1912, for the aspect of the city is greatly changed. Streets have been widened, and the many new buildings give an unfamiliar appearance, to which even residents are hardly yet accustomed. The facilities for visiting the City and neighbourhood have been greatly added to. Since 1883 the Mersey Tunnel, connecting Liverpool with Birkenhead, Wallasey, and the entire Wirral Peninsula, has been opened; and the electrification of the railway system renders a run through the tunnel a less trying ordeal than in the early years of its existence, when passengers were almost suffocated with sulphur fumes.

The Electric Overhead Railway is another feat of engineering skill, and was opened in 1893. From the windows of the trains the visitor obtains a splendid view of the river, sailing ships and steamers, dry docks and landing stages, and, in fact, the whole of the magnificent line of docks, which are the finest in the world. This was the first railway of its kind, and traverses the docks from end to end. At the northern extremity is Seaforth, the home of William Ewart Gladstone when a boy, while the southern terminus is close to Sefton Park, considered by some to be one of the finest in the country.

The tramway system has undergone complete reorganization. New routes have been laid down and widely extended, horse traction has entirely disappeared, and the splendid service of electric cars to almost every part of the city leaves little to be desired. The disappearance of the horse-drawn trams and the ancient omnibuses from the main streets is, perhaps, one of the changes which will first strike the eye of those who remember Liverpool when they were the principal means of locomotion. In these days of electric cars, motors, taxicabs and motor cycles, a fine carriage with a pair of spanking horses attracts as much attention as would have been bestowed on a 40 h.p. Napier thirty years ago.

The view of the city from the river is striking. In the foreground are the magnificent offices of the Mersey Docks and Harbour Board and Liver Friendly Society, and the clock on the latter building constitutes Liverpool's claim to the possession of at least one "biggest thing on earth," for the "Great George" outrivals "Big Ben" in size.

In the first part of this article (December 9th) a picture was given of St. George's Hall, which Mr. Norman Shaw, R.A., described as "one of the greatest edifices of the world." The east front is faced with a fine portico of sixteen Corinthian columns about 60 ft. in height. The building contains statues of many distinguished citizens, and the great organ, built by Willis, is an instrument of extreme power and beauty of tone.

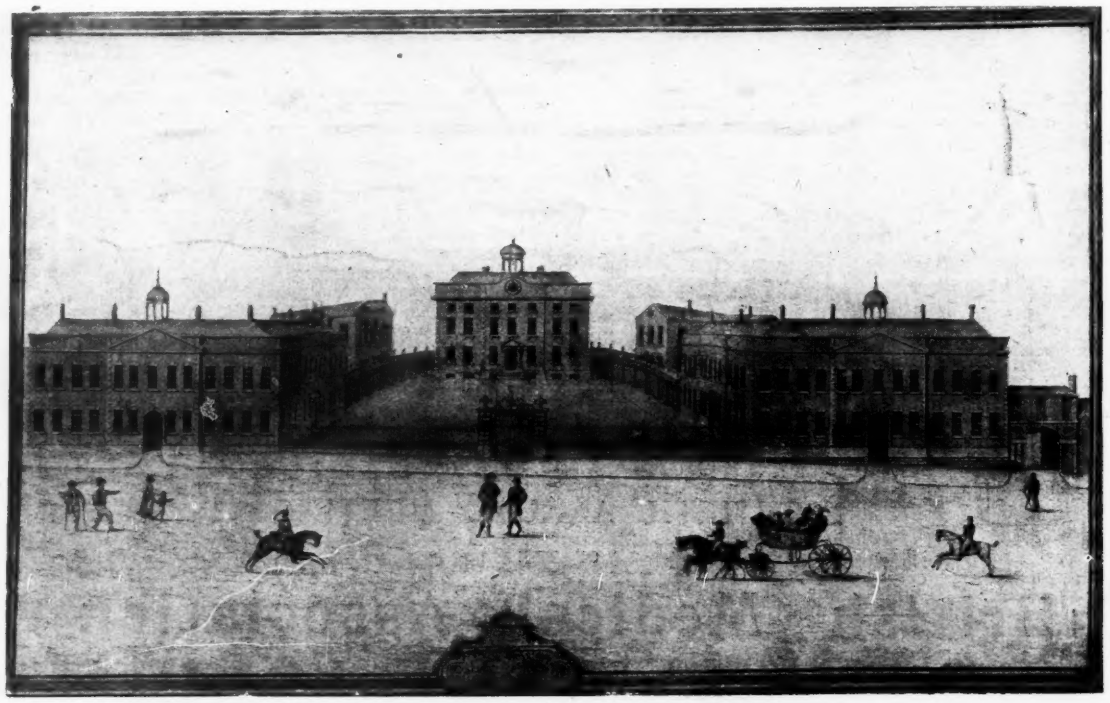
Leaving St. George's Hall by the north side, a magnificent series of buildings is presented to the view—the Walker Art Gallery, the gift of Sir Andrew Barclay Walker, Bart.; the Free Public Library and Picton Reading Room; the Brown Library and Museum, the former the gift of the late Sir William Brown, Bart.; and the Central Technical Schools. There is no other city in the universe that can show a group of buildings representing science, art, and literature in such proximity, science and art being pivoted on literature.

These buildings overlook St. John's Gardens, a fine open space at the rear of St. George's Hall. Here there are statues to William Ewart Gladstone—whose birthplace in Rodney Street (now the home of the medical faculty) may still be seen—William Rathbone, and other famous Liverpool men. The memorial to the officers and men of the King's Liverpool Regiment who fell in the Burmese, Afghan, and South African wars is one of the finest monuments to the memory of the fallen brave to be found in the kingdom.

Popularly styled "The Gateway of the West," Liverpool, the maritime capital of the empire and the second seaport of the world, possesses a splendid floating landing stage which visitors should not fail to inspect. The places of interest in the vicinity of the city must await mention on some future occasion.

SCHOOL FOR THE INDIGENT BLIND—1790.

Man's inhumanity to man has perhaps never been shown more clearly than in the diabolical custom of putting out the eyes of prisoners of war, those accused of treason, and of criminals. The literature on this subject is almost too horrible to contemplate. This form of punishment by one or another method has been resorted to in nearly every civilized country, from the time of Samson—probably before—to as late as the middle of the nineteenth century. "When the punishment was intended to be gentle it was



Front view of Liverpool Infirmary 1749, facing Shaw's Brow, now William Brown Street. The Library Room built over archway of patients' entrance is seen on the right-hand side.
(From an engraving in the possession of R. A. Bickersteth, Esq., F.R.C.S.)

effected by red-hot needles or plates, but when no mercy was intended to the victim his eyes were plucked out with the thumb and finger, or crushed with the heel of a boot."

Turning from this act of deliberate cruelty to the subject of blindness as it arises from various causes, it is cheering to find that there is a general decrease in the number of blind persons. This is as it should be, because in the majority of cases blindness is preventable; and "progress in medical science, use of antiseptics, better sanitation, control of infectious diseases, and better protection in shops and factories," have all been factors in lessening the evil. In a paper of this kind it is not possible to do more than hint at the magnitude of the work that has been done, and which still remains to be done, in this field of labour. Laws must be enacted and enforced with regard to the treatment of the eyes of infants; but the opinion of Dr. Park Lewis, of Buffalo, N.Y., as deduced from a paper prepared by him for the American Medical Association, would indicate that laws are not sufficient to prevent evil, and the combined influence of the medical profession, the general public, and the State, will be necessary to accomplish the end in view—namely, preventing preventable blindness. In the days which are probably not far distant, cases of blindness, except from accident and constitutional disease, will be reduced to a minimum.

To Liverpool belongs the honour of having been the first town in the United Kingdom to establish a school for the blind. It is difficult to determine who was the first to suggest its establishment, and we can forgive all who claim to have done so.

The idea originated in 1790, and the furthering of the scheme is attributed to Mr. Edward Rushton, father of Mr. Rushton, sometime stipendiary magistrate in Liverpool, and great grandfather of Commander Edward Astley Rushton, R.N., who recently married the daughter of our President-elect, Sir James Barr. Edward Rushton was an enthusiastic champion of the cause of the negro, and when he was 19 years of age, during a voyage to Dominica, malignant ophthalmia broke out among the slave cargo; when all others refused to help he attended them in the hold. Unfortunately he fell a victim to the disease, and was deprived of sight for the rest of his life.

He was a benevolent and energetic man, but he believed that the best way to help the blind was to educate them in the performance of some useful and suitable handicraft. He first proposed that all blind persons should themselves subscribe to a fund for providing relief in sickness and old age. His blind friend, Mr. John Christie, an eminent teacher of music, suggested gratuitous instruction upon the harpsichord, violin, etc., to the indigent blind of both sexes, for which it would be necessary to secure the use of a room in one of the public buildings. The Rev. Mr. Dannett—to whom some writers give the credit of founding the school—invited several of those interested in the matter to dine with him. There were present, Mr. Lowe, Mr. Christie, and Mr. Rushton—all three blind; also the Rev. J. Smyth (Incumbent of St. Anne's), Mr. Carson, and Mr. Roscoe. A few rules and regulations were drawn up, chiefly the work of Mr. Roscoe, and so the scheme was launched, and the Liverpool Asylum for the Blind was opened in 1791.

Two houses, "recently erected," were rented in Commutation Row, but the establishment was carried on "on a principle different from that of any other in the kingdom; the blind are neither fed nor lodged; they receive bread and beer every Sunday, and the rooms have good fires; it is a sort of manufactory, where every person is paid in proportion to his labour, with this distinction, that masters are employed to teach them at the charge of the charity, and the several goods so manufactured are afterwards sold to the best advantage. This greatly lessens the parish expenses, which would otherwise cause an advance on the different taxes imposed on the inhabitants for the support of the poor."

These premises were utilized for about ten years, but in 1800 a larger building was erected on the south side of London Road. "The musical services of the blind pupils proved so attractive that it was determined to build a church, which, besides serving the purpose of the inmates, might prove beneficial to the funds of the institution."

In 1850, owing to the enlargement of the railway station, it was necessary to remove the church, and "a purchase was negotiated of the entire site of the institution, which was removed to Hardman Street. . . ." The old building in London Road was demolished, and the School for the Blind is still situated in Hardman Street.

Edinburgh and Bristol followed the example set by Liverpool and established similar institutions in 1793, and to-day there are thirty-seven schools for the education of the blind scattered through the kingdom, two being in Liverpool

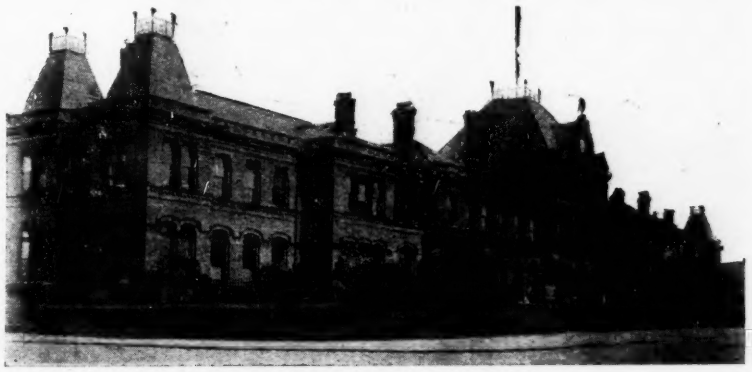
LIVERPOOL HOSPITALS.

Stanley Hospital.

As in the case of so many of Liverpool's splendid hospitals, the Stanley Hospital owes its origin to the energy and initiative of one or two medical men—in this instance to David Dunlop Costine, M.D., and Edwin Mason Sheldon, M.R.C.S. It was established at 56 and 58, Stanley Road, in the year 1867, and designated, by special permission of the Right Honourable Edward Geoffrey, fourteenth Earl of Derby, K.G., etc., "The Liverpool Stanley Hospital."

In 1896 a stained glass window was added to the hospital, erected by the tenantry of the Knowsley estate to the memory of the fourteenth Earl of Derby, unveiled by the sixteenth Earl of Derby, Lord Mayor of Liverpool, March 20th, 1896.

From time to time new wings have been added, and the hospital to-day is a monument to the generosity of the Earls of Derby, who have always taken a keen interest in its welfare.



Stanley Hospital.

Eye Hospitals.

In 1820 two institutions for the treatment of diseases of the eye came into existence, one—in August—the Liverpool Ophthalmic Infirmary, to which Dr. Traill was the physician, and Messrs. Thomas Christian, James Dawson, and T. F. Hay, surgeons; the other—in July—the Institution for Curing Diseases of the Eye, to which Dr. Hannay was physician, Messrs. Brandreth and Loftus consulting surgeons, and Mr. Brackenbury operating surgeon and surgeon-in-ordinary. The former of these two still exists, under the name of the Liverpool Eye and Ear Infirmary; the Institution for Curing Diseases of the Ear—established in 1840 at 5, Mount Pleasant—being amalgamated with the Ophthalmic Hospital, at the instance of Mr. Hugh Neill, in 1841.

In December, 1838, "The Dispensary for Diseases of the Eye," 5, Marybone, was opened by R. Hibbert Taylor, M.D. The committee consisted of Rev. Jonathan Brookes, Hugh McNeill, Dr. Ralph, George J. Duncan, Robert Dirom, and the surgeon, R. Hibbert Taylor, M.D.

The first report appeared in 1841, after two years' work, in which upwards of 2,000 patients had been treated as out-patients, funds not being available for beds. The establishment of the dispensary was due to the fact that there had been "great increase of the working classes in the northern districts" of the town.

The second report, published in 1845—four years after the first—gave 8,000 cases treated in the six years since opening. The expenses were £200 to £300 a year, calculated from the commencement. This was defrayed entirely by the committee, with the exception of £33 14s. 6d., subscribed partly by friends (£23 18s. 6d.) and partly by dispensary patients (£9 16s.) in the five years 1840 to 1844.

Children's Infirmary.

The Liverpool Infirmary for Children was promoted by Dr. Alfred Stephens, of 4, Upper Parliament Street, in 1851, the funds being provided by Mr. Matthew Gregson, who was president of the institution from 1851 to 1876. It was the only provincial hospital devoted entirely to children.

The building first used was a small private house in Upper Hill Street. Within three years a move to a larger house, 48, Great George Street, was made. Until 1856 only out-patients were relieved, but in that year the increasing number of patients rendered another migration necessary. A house in Hope Street (No. 58) was rented, and for the first time in-patients accommodated.

In 1866 the present site in Myrtle Street was obtained, and on June 23rd in that year the late Duke of Saxe-Coburg, then Duke of Edinburgh, laid the foundation stone of the Infirmary for Children, which has recently been superseded.

In 1880 the committee reported that "the attendances reached the extraordinary total of 29,250." Notwithstanding the various suggestions made for reducing the frequency of attendance and the imposing of a limit (first of fifty then of sixty) to the number of new cases seen on any one day, there was a steady increase till the maximum was reached in 1896.

Overcrowding of the out-patient department, which was situated immediately below one of the wards, with constant outbreaks of diphtheria and other infectious diseases, necessitating frequent closing of the whole infirmary, necessitated rebuilding.

The experts who reported on the sanitary condition of the infirmary all laid great stress on the absolute necessity of separating the out-patient department from the building of the infirmary proper.

Children's Infirmary.

(Published by permission of Messrs. Hugo, Lang and Co., Liverpool.)

The new building was opened on January 10th, 1907, by H.R.H. the Duchess of Albany. There is accommodation for one hundred cots in five wards, three for medical and two for surgical cases. The hospital proper, the out-patient department, the laundry, and the nurses' home are all separate and detached buildings.

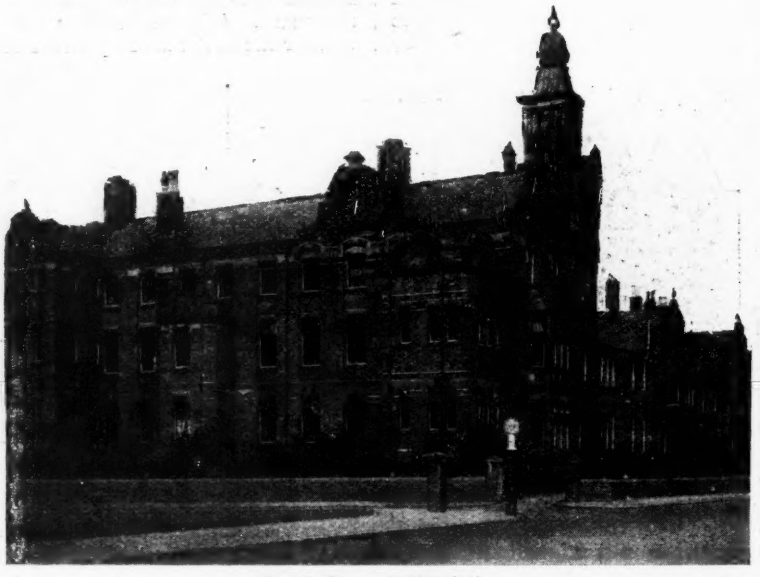
Bootle Borough Hospital.

The annual report of this hospital states that it was established in 1846. It was; but how, and where? At the corner of Strand Road and Derby Road a certain Dr. Reid had a surgery, and part of it was utilized as a dispensary. Dr. Reid appears to have laboured alone and single-handed for some years, but he was happy in having friends who sympathized in a practical way with his desire to do still greater things. A sum of money left to the Rev. John Crump by a Mr. Robinson formed the nucleus of a fund which enabled a start to be made.

In 1871 a cottage was taken in Berry Street, Bootle,

where medicines were dispensed and four or five beds provided. Dr. Wills now became an active worker, and together with some half-dozen energetic gentlemen succeeded in greatly extending the usefulness of the charity. In 1872 the first wing of the hospital was built upon land given by the late Earl of Derby, uncle of the present Earl, and accommodation was now available for twenty to twenty-one patients.

When the Bootle Docks were opened in 1887 the population of the district was more than doubled—increasing from 20,000 to 40,000 or 45,000—and further hospital accommodation became an imperative necessity. Another wing was added to the hospital at a cost of £12,000. Lord Derby generously subscribed £1,000 towards the funds of the hospital. Through the good offices of the late Edward Whitley, the sum of £500 from the Roger Lyon Jones legacy was apportioned to the fund also.



Bootle Borough Hospital.

The Committee of the Bootle Borough Hospital is desirous of adding a new wing to the building as a memorial to our late King Edward VII, deeming this the most desirable means of perpetuating his memory. If the scheme now in contemplation can be carried out, the hospital will be rendered up-to-date in respect to buildings and equipment.

Some other Hospitals.

Space will not permit of more than a passing allusion to a few of the other hospitals which have played so great a part in the history of medicine in Liverpool in the relief of suffering.

In 1757 Dr. Matthew Turner advocated the establishment of a lying-in hospital. Forty years later (1796) a "Ladies' Charity" for the relief of poor married women at their own homes was founded. Eighty-four years later (1841), a Married Lying-in Women's Hospital came into existence. Recently Sir William Hartley, one of Liverpool's most generous benefactors, has offered to erect a Maternity Hospital free from special restrictions—a most pressing need.

Birkenhead Borough Hospital.

The Hospital for Cancer and Skin Diseases was founded in 1862 by Dr. Seaton Smythe, who in 1869 bequeathed it £10,000. St. George's Hospital for Diseases of the Skin was established in 1863. St. Paul's Eye Hospital was founded in 1871 by the late Mr. George Walker at 6, St. Paul's Square, then a lodging house, for the treatment of the poor suffering from diseases of the eye and ear. In 1875 the whole house was taken, a committee appointed, and the hospital made a public charity. In 1909 ear work was discontinued, and in 1910 the present building was erected opposite the David Lewis Northern Hospital.

The Hospital for Women, opened in 1883, was the outcome of the endeavours of Dr. Francis Imlach. The Hahnemann Hospital was erected and given to the city by the late Sir Henry Tate, Bart., in 1877.

On the Cheshire side of the Mersey are the Birkenhead Borough Hospital, Birkenhead Wirral Children's Hospital, and Victoria Central Hospital, Liscard.

The Hospital Sunday and Saturday Fund for 1911 was £14,742, the lowest amount received for nine years. The Fund started in 1871, the total received in forty years being £308,695.

TRAINING SCHOOL AND HOME FOR NURSES, ASHTON STREET.

This building was erected by William Rathbone, in memory of his wife: "In grateful memory of her love the work of nursing the poor in their own homes by trained nurses was instituted in 1859, and this Home was built and opened in 1852."

For a full account of the circumstances which led up to the founding of these Homes it is necessary to read the *History and Progress of District Nursing*, by William Rathbone, and also *William Rathbone: a Memoir*, by Eleanor E. Rathbone. All that can be ventured on now is to glance at the principal facts in connexion with their establishment.

In 1859, Mrs. Rathbone died. To quote from one of the above-mentioned volumes:

> His wife had been attended during her last illness by a nurse, Mary Robinson. . . . Seeing how much difference trained nursing could make, even in a home where every comfort and appliance that affection could suggest was provided, William Rathbone began to think what illness must mean in the homes of the poor, where comforts, appliances, and skill were alike wanting. . . .

He engaged Nurse Robinson for three months to nurse poor patients in their own homes in a certain district of Liverpool, undertaking to supply necessary appliances, nourishment, and medical comforts. At the end of a month Nurse Robinson said she found herself unable to face the misery and suffering she was called upon to witness, and desired to be released from her engagement. She was, however, persuaded to go on, and grew to love her work so much that she said if Mr. Rathbone would agree to keep her on she would never do any other kind of nursing. Her success in affording relief reconciled her to the sadness of her calling. To quote again:

> Lives had been saved which would otherwise have been lost; patients considered chronic had been restored to health; object lessons in the value of cleanliness, order, and fresh air had been given in many homes.

Mr. Rathbone then wished to extend his experiment

and looked about for suitable nurses, but in vain. He applied to numerous institutions, but could not succeed in obtaining any. He then consulted Miss Florence Nightingale. She suggested that Liverpool had better form a school to train nurses for itself in its own hospital.

The principal Liverpool hospital, the Royal Infirmary, had then no facilities for training, and most of its nurses, like those of other hospitals of the day, were women of a rough type, often untrustworthy and intemperate, and, according to the lowest modern standard, inefficient. The Committee were conscious of the need for improvement in this respect, and had made an effort to attract a better class of women by empowering the matron to offer any that seemed worth it a salary of £16 instead of the usual £10. But the matron had found only four nurses whom she could trust not to celebrate such a rise in prosperity by getting drunk on quarter-day.

Nurses' Home, Royal Infirmary
(Published by permission of Messrs. Hugo, Lang and Co., Liverpool.)

The real difficulty in starting a training school was that the Infirmary had not sufficient accommodation for either nurses or probationers. Mr. Rathbone therefore undertook to build a training school and home for nurses, and to present it to the Infirmary, on condition that it was to be given a fair trial as a training school, and if this failed the building was to become the absolute property of the Infirmary, and might be turned to any purpose they pleased.

On July 1st, 1862, the nursing of the Infirmary was handed over to the committee of the new Liverpool Training School and Home for Nurses, and after a year's work in temporary premises they took possession of their Home in Ashton Street on May 1st, 1863.

Their work was to provide nurses for three distinct purposes in the following order of priority: first, for the Royal Infirmary; secondly, for poor patients in their own homes; thirdly, for well-to-do private patients. The training was, of course, to be carried on in the wards of the Royal Infirmary.

In 1898 the District nursing work of the Liverpool Training School and Home for Nurses, was handed over to the Liverpool Queen Victoria District Nursing Association.

The inscription on the statue to William Rathbone states that he "instituted the Training School for Nurses, and brought trained nurses into the homes of the poor and suffering, first in Liverpool and later throughout the country."

BRITISH MEDICAL SOCIETIES.

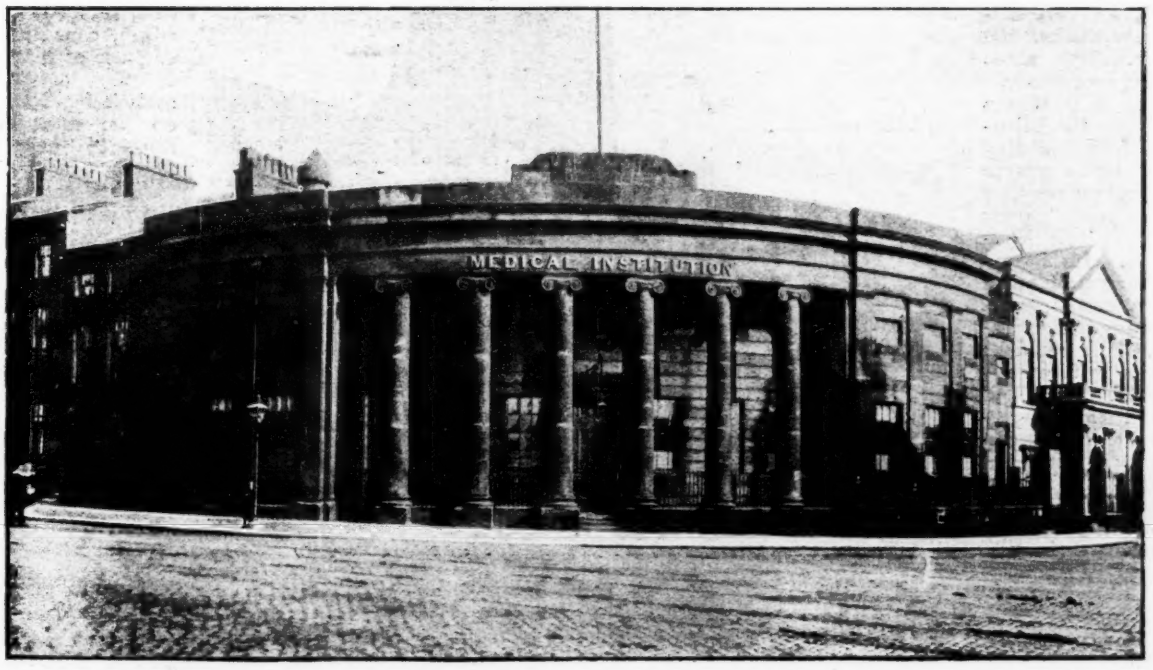
The question of precedent in the formation of medical societies is of historic interest, and it reveals the names of men of outstanding enlightenment in bygone days.

In ancient times medical libraries were in the possession of monasteries and cathedrals. Before the establishment of the Royal College of Physicians, the licence to practise physic was in the hands of the Church, and the practice of medicine scarcely existed as a distinct profession. Thus we find in the catalogue of Christ Church, Canterbury, written about the year 1290, mention of 280 works on medicine; in the library of St. Augustine at Canterbury, 230 or more medical treatises; and in the Dover Privex Library catalogue, written in 1389, mention of 118 medical works.

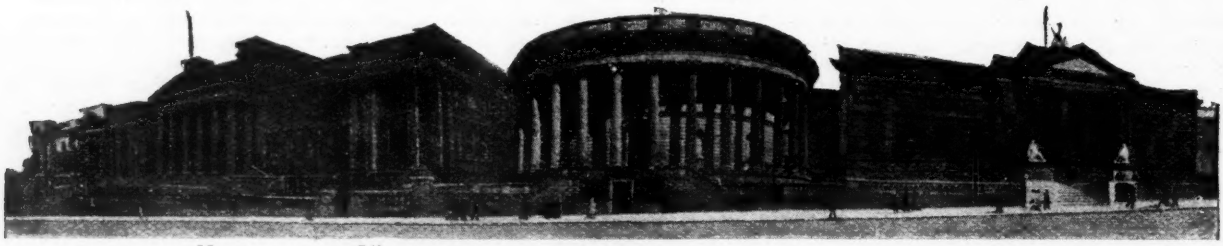
The University of Aberdeen was founded in 1477, and the University of Edinburgh in 1583; but at first, in these universities and in all other colleges in Scotland, only divinity, school philosophy, and languages were taught.

A library existed in St. Bartholomew's Hospital about the year 1425; only two books of this library are known to exist. This may not have been a medical library.

Soon after the foundation of the Royal College of Physicians (1518), its founders and first president, about the year 1520, gave the college a number of books, and this



The Medical Institution.



gift of Sir Thomas Linacre formed the nucleus of the present library.

The first mention of a library at the Society of Apothecaries is in 1633. The Medical Society of London, founded in 1773, in its first published memoir, dated 1792, speaks of a medical library having been formed for the use of its members. The present library of the Royal College of Surgeons was begun soon after its re-establishment in 1800, although mention is made of a library when the separation between the barbers and surgeons took place in 1745, the former retaining the hall, library, and plate.[1]

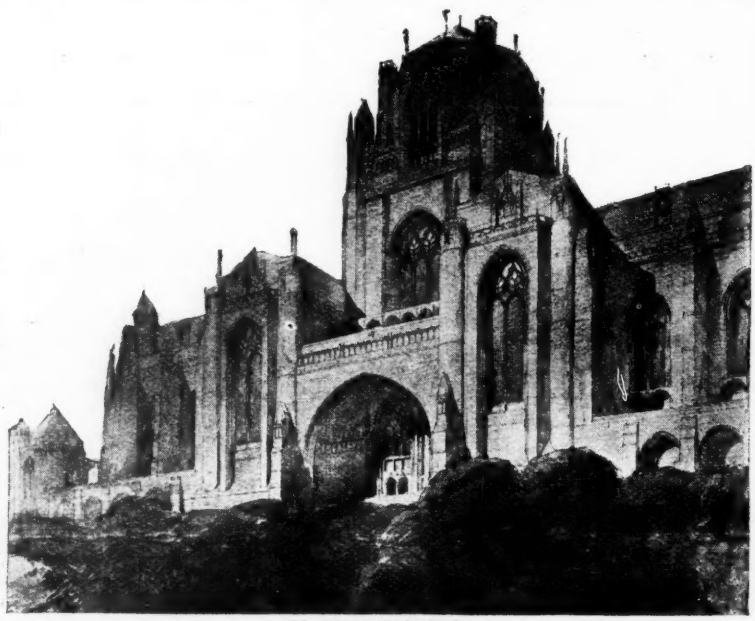
Liverpool Medical Societies.

The haze which envelops the origin of all the early medical societies of Liverpool is as difficult to penetrate as that which surrounds the lives of the early medical men.

Liverpool Medical Society—Liverpool Medical Library.

Reference has already been made in the previous article to the fact that the Liverpool Medical Library was publicly instituted on October 7th, 1779. Taking the *public* institution as the date of origin, the society ranks fourth among the medical societies of England, the Medical Society of London (1773), Middlesex Medical Society (1774), Colchester Medical Society (1774), alone taking precedence.

But it is also a fact that the Liverpool Medical Library existed as a private medical society "for some years" prior to its public institution. Its formation may have taken place as early as 1771—not earlier—and if it could be shown to have originated in 1772, it would take precedence of every medical society in England; the Edinburgh Medical Society (1737), alone taking precedence in the United Kingdom.



The New Cathedral.
(Reproduced by permission of the Right Reverend the Lord Bishop of Liverpool.)

Another fact—to be found in the earliest catalogue of the Liverpool Medical Library, which is in the possession of the Athenaeum Library—is that the name by which the Liverpool Medical Library was originally known was "The Liverpool Medical Society." The object of this medical society, named after its *public* institution the Medical Library, was the formation of a medical library.

The housing of the books of this library during the first half-century of its existence was a matter of difficulty. Originally they were kept (1771?–1779) in the dispensary room of the infirmary on Shaw's Brow—the site of St. George's Hall—thence they were taken (1779) to the dispensary in Church Street, as being nearer the centre of the town. Next a room was specially built (1807) for the books over the patients' entrance to the infirmary (Shaw's Brow) (see engraving). On the demolition of the infirmary to make way for St. George's Hall the Corporation built (1827) a "Library Room" at the back of the weighing machine house in the Cattle Market, Lime Street; and when this site was required (1833) for Lime Street Station arrangements were made for its accommodation, first at 31, Houghton Street (1834), next at 70, Wood Street (1834), and later at 16, Suffolk Street (1835).

It was the existence of this collection of books which led (1833) Dr. J. Rutter to agitate for a building worthy of accommodating a library, which in the fifty and more years which had elapsed had become a "very valuable one," and in this necessity we find the origin of the fine building—the Liverpool Medical Institution—at the corner of Mount Pleasant and Hope Street.

In the meantime (1779-1833) glimpses of other medical societies appear. In 1806, 1808, and 1813, we read of (*a*) the Liverpool Medical and Physical Society, (*b*) the Medical Society of Liverpool, (*c*) the late Medical Society of this town; but we have discovered no data respecting the origin, constitution, or place of meeting of any of these societies. Neither do we know the cause or causes of their termination.

In the year 1833, the Liverpool Medical Society — the fourth or fifth of its name—was formed for the discussion of medical subjects, Dr. Rutter being elected its first president. An additional reason for desiring more commodious premises than would suffice for a library was the existence of this Medical Society.

The Liverpool Medical Institution.

The Medical Institution is the oldest and finest building of its kind in Great Britain. It is now one of the oldest public buildings in the city, being opened in 1837, before the foundation stones of either the St. George's Hall or the Liverpool College, Shaw Street, were laid. If the example of naming a building after its founder was followed, the name of this building would be the Rutter Medical Institution. An enlightened city council, which has added lustre to its reputation by naming its museum the "William Brown Museum," its art gallery the "Walker Art Gallery," and its reading room the "Picton Reading Room," would view sympathetically a movement to perpetuate the name of a most distinguished citizen.

[1] For this information respecting medical libraries I am indebted to Mr. W. Fleming, Bedell and Secretary of the Royal College of Physicians, London.

As soon as the Medical Institution was opened, the Medical Library Society, with its valuable collection of books moved into it, and the recently formed (1833) Medical Society shortly after transferred their meetings from the Royal Institution to it.

During the July meetings the Medical Institution will be the head quarters of the lady guests of the Association.

DR. JOHN RUTTER.

No medical sketch of Liverpool would be complete without allusion to Dr. Rutter. He was the son of one of Liverpool's freemen, was born in Liverpool (1762), educated at Edinburgh, and rapidly rose to the acknowledged position of Liverpool's leading physician. A Quaker, and the nephew of William Rathbone (1762-1789), he was one of the small band of enthusiastic pioneers, including Mr. William Roscoe, Drs. James Currie, John Bostock, and Thomas Stewart Traill, "who gave the right impetus and a right direction to that public spirit to which we owe those institutions of which Liverpool is with reason proud." It was in recognizing and advocating the means by which progress is alone possible—namely, education and co-operation—that Dr. Rutter pre-eminently shone. He was not only the founder of the Medical Institution Building, but the Athenaeum owes its existence principally to his exertions.

THE CATHEDRAL.

While Liverpool has undoubtedly been first in the United Kingdom, or first in the provinces, in the establishment of several institutions and societies, and in the case of a circulating library first in Europe, it is only now in the twentieth century that a Cathedral worthy to be an "outward sign and symbol of the Christian Faith, to which the British people owe everything," is in process of erection.

The Bishopric of Liverpool was formed in pursuance of the Act of Parliament known as the Bishoprics Act of 1878, and it was by an Order in Council dated March, 1880, that the Parish Church of St. Peter (erected 1700) was assigned to the diocese as its cathedral. The first Bishop of Liverpool, appointed by Lord Beaconsfield, was the Very Rev. J. C. Ryle; and we have it on the authority of his successor—Dr. Chavasse, the present Bishop—that it is mainly owing to his policy and wise organization of the diocese that the erection of a cathedral was brought within the range of practical politics.

The selection of a suitable site for the cathedral was a matter of considerable difficulty, but the one eventually decided upon—St. James's Mount—gives general satisfaction. "The visitor who takes his stand at the corner where Hope Street joins Upper Duke Street, will gain some idea of the commanding situation and splendid possibilities of the site, which in many respects recalls the beauties of Durham and Lincoln. St. James's Cemetery lies at its foot, and the wooded hillside, some 50 ft. in height, leading up to the summit of the Mount, will add beauty as well as dignity to the noble building which is to crown the eminence."

The 19th of July would appear to be a red-letter day in the Calendar of Liverpool, for that date, apart from being the birthday of the Association, and the date on which its members will assemble in Liverpool for the fourth time, will be recorded in the annals of the city for all time, for on July 19th, 1904, the foundation stone of the cathedral was laid by His Majesty the late King Edward VII. Although the main body of the building is still surrounded by scaffolding, the beautiful Lady Chapel is completed, and is open daily for divine service.

PROGRAMME OF BUSINESS.

President: Professor ROBERT SAUNDBY, M.D., LL.D., F.R.C.P., Professor of Medicine, University of Birmingham, and Physician, Birmingham General Hospital.

President-elect: Sir JAMES BARR, M.D., LL.D., F.R.C.P., Consulting Physician, Royal Infirmary, Liverpool.

Past-President: Sir HENRY T. BUTLIN, Bart., D.C.L., LL.D., Consulting Surgeon, St. Bartholomew's Hospital, London.

Chairman of Representative Meetings: EWEN JOHN MACLEAN, M.D., Gynaecologist, Cardiff Infirmary.

Chairman of Council: JAMES ALEXANDER MACDONALD, M.D., LL.D., M.Ch., R.U.I., Honorary Physician, Taunton and Somerset Hospital, Taunton.

Treasurer: EDWIN RAYNER, M.D.Lond., F.R.C.S., Consulting Surgeon, Stockport Infirmary, Stockport.

The Eightieth Annual Meeting of the British Medical Association will be held in Liverpool in July, 1912. The President's Address will be delivered on Tuesday, July 23rd, and the Sections will meet on the three following days. The Annual Representative Meeting will begin on Friday, July 19th, 1912.

The Address in Medicine will be delivered by GEORGE ALEXANDER GIBSON, M.D., D.Sc., LL.D., F.R.C.P.Edin., Physician, Edinburgh Royal Infirmary.

The Address in Surgery will be delivered by FRANK THOMAS PAUL, Ch.M., F.R.C.S., Surgeon, Liverpool Royal Infirmary.

THE SECTIONS.

The scientific business of the Meeting will be conducted in twenty Sections, which will meet on Wednesday, July 24th, Thursday, July 25th, and Friday, July 26th.

The President, Vice-President, and Honorary Secretary of each Section constitute a Committee of Reference for that Section, and exercise the power of inviting, accepting, or declining any paper, and of arranging the order in which accepted papers shall be read. Communications with respect to papers should be addressed to one of the Honorary Secretaries.

A paper read in the Section must not exceed fifteen minutes, and no subsequent speech must exceed ten minutes.

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PROVISIONAL PROGRAMME.

The following is the provisional time table for the Liverpool Meeting:

FRIDAY, JULY 19TH, 1912.
10 a.m.—Annual Representative Meeting.

SATURDAY, JULY 20TH.
9.30 a.m.—Representative Meeting.

MONDAY, JULY 22ND.
9.30 a.m.—Council Meeting.
10 a.m.—Representative Meeting.
7 p.m.—Secretaries' Conference and Dinner.

TUESDAY, JULY 23RD.
9.30 a.m.—Representative Meeting.
2 p.m.—Annual General Meeting.
8.30 p.m.—Adjourned General Meeting, President's Address.

WEDNESDAY, JULY 24TH.
9 a.m.—Council Meeting.
10 a.m. to 1 p.m.—Sectional Meetings.
12.30 p.m.—Address in Medicine.
3 p.m.—Religious Services.

THURSDAY, JULY 25TH.
10 a.m. to 1 p.m.—Sectional Meetings.
12.30 p.m.—Address in Surgery.
7.30 p.m.—Annual Dinner.

FRIDAY, JULY 26TH.
9 a.m.—Council Meeting.
10 a.m. to 1 p.m.—Sectional Meetings.

SATURDAY, JULY 27TH.
Excursions.

Medical News.

MR. LYNN THOMAS, C.B., has been appointed a member of the Advisory Committee of the British Red Cross Society.

THE usual course of lectures and demonstrations at the Hospital for Sick Children, Great Ormond Street, will be resumed on Thursday next at 4 p.m., when Dr. Still will give a lecture on asthma in early life.

THE private view of a collection of oil paintings and water colours by Dr. Leonard Hill, F.R.S., which has been arranged at Baillie's Gallery, Bruton Street, Bond Street, takes place this day, January 6th. Those of our readers who visited the previous collection by the same artist-physiologist will anticipate with pleasure the opportunity of visiting his new exhibition, which remains open until January 29th.

THE Committee of Organization of the Seventh International Congress of Dermatology and Syphilography has fixed April (8th–13th) as the date of the Congress, which is to be held in Rome immediately before the International Congress against Tuberculosis (April 14th–20th). The definitive programme of the Congress of Dermatology will be printed during the latter half of the month of January, and fresh communications can still be inserted up to January 15th.

THE next meeting of the Society for the Study of Inebriety will be held in the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, W., on Tuesday, January 9th, at 4 p.m. (afternoon meeting). Mr. Hastings Gilford, F.R.C.S. (author of *The Disorders of Post-natal Growth and Development*), will open a discussion on "Alcoholism and Problems of Growth and Development."

THE sixth annual dinner of the Royal London Ophthalmic Hospital will take place at the Imperial Restaurant, Regent Street, W., on Wednesday, February 7th, when Mr. Richardson Cross will take the chair at 8 p.m. Further particulars may be had from Mr. J. Herbert Parsons, 54, Queen Anne Street, W.

DR. W. B. BROAD, Superintendent of the Cardiff Sanatorium, was, on the occasion of his 50th birthday, presented with a beautiful silver centre-piece at a dinner given in his honour by a large circle of friends. Professor Hepburn, who presided, referred to his association with Dr. Broad at Edinburgh, when he was a popular sergeant-major in the University Medical Corps.

DR. R. MURRAY LESLIE, Senior Physician to the Prince of Wales's General Hospital, has been presented by the French Consul-General to M. Cambon, the French Ambassador, who personally conferred upon him the decoration of Officier de l'Instruction Publique et des Beaux-Arts, recently awarded to him by the French Government.

A CIRCULAR has been issued to members of the British Medical Association in Kensington, Hammersmith, Chelsea, and Fulham, announcing that it has been decided to unite the local members in a "British Medical Association Reform Committee" in opposition to the decision of the Council concerning the present position of the profession under the National Insurance Act. It is further announced that a meeting will be held under the chairmanship of Dr. Fred. J. Smith, at the Town Hall, Hammersmith, on Tuesday next, at 4 p.m., for the purpose of forming this committee for the Kensington and Chelsea Divisions. The basis of agreement, the circular states, is an attempt to remedy the failure of the present Council of the British Medical Association to obtain the just demands of the profession, and the object of the committee is to consider how this attempt may be made successful. Medical men from other districts will, it is stated, be welcomed

British Medical Journal.

SATURDAY, JANUARY 6th, 1912.

A SPECIAL REPRESENTATIVE MEETING.

At no time, probably, in the history of the British Medical Association has there been so much excitement amongst its members as at the present moment. The labouring press has with difficulty toiled to keep pace with the activity of the Divisions. Meetings have been held all over the country, at which numbers have attended who are usually content with the privileges of platonic membership. As the reports published in the Journal show, the great majority of them have declared with no uncertain sound that in their opinion, unless the six cardinal principles are granted without evasion or reservation, the profession should stand aside and let the Frankenstein of the Exchequer make what arrangements he can to galvanize into some likeness of life the legislative monster he has created. It will be noted that eight Divisions have asked the Council to convene a Special Representative Meeting to discuss the emergency, and it is with much satisfaction that we are in a position to announce that the State Sickness Insurance Committee, which met on Wednesday, has resolved to recommend the Council to take steps to call a Special Representative Meeting to consider the present position of the profession with reference to the Insurance Act. A report will be issued to the Divisions for their consideration, and the Representative Meeting will be held at as early a date as possible. We understand that a date towards the end of next month is contemplated. The profession stands in need of a clear lead, and we can see no other way of getting this save through the Representative Body.

A requisition has been received, signed, we are informed, by 564 members, for a Special General Meeting of the British Medical Association to discuss a resolution formulated as a result of the meeting in London of December 19th, in the following terms: "That, in the opinion of this Extraordinary General Meeting of the members of the British Medical Association, the National Insurance Act does not safeguard the six cardinal points of the policy of the British Medical Association in a manner satisfactory to the members of the aforesaid Association, and we consider that the Council of the British Medical Association has failed in its duty towards its members." As a requisition signed by a hundred members is valid, this requisition is in this respect good, but Mr. Colquhoun Dill, the counsel consulted when the present constitution of the Association was drawn, has advised the Council that the requisition is not in order, since the business proposed to be done is not of the order which the Association has decided it shall be competent for a general meeting to do. Counsel has therefore expressed the opinion that the Council would be acting unconstitutionally were it to act upon the requisition by convening an Extraordinary General Meeting. Were this purely a legal or technical point, it would be difficult on general grounds of policy to defend; but it is not. Under the rules which, in framing the present constitution, the members of the Association devised for it, the powers of a General Meeting are very narrowly limited, extending to little beyond certain formalities reserved for the general meetings of a company by the Companies Act. All real power to deliberate, and to settle and declare the policy of the Association, rests with the Representative Meeting, in which by Article 29 the general control and direction of the policy and affairs of the Association is vested. Counsel has accordingly advised that the subject-matter of the proposed resolution is a matter to be dealt with by the Representative Body, and points out that a special meeting of that body can be convened under By-law 36 by the Chairman of Representative Meetings, if so requested by either the Council or by seven constituencies.

Representatives are elected annually by the Divisions; but there is a by-law which provides that, if a Representative is unable or unwilling to attend a Representative Meeting, the constituency he represents has power to select a substitute. This point is worth noting, because it serves to meet any objection to now calling a Special Representative Meeting which might be founded on the belief that it would be useless to ask the Representative Body to reconsider decisions made so recently as last November.

The essence of the constitution of 1902, as originally conceived, was that the Representative was to be elected by the members of each Division at a meeting held for that purpose, and was to report and vote in accordance with the expressed views of his constituents at such meeting or thereafter. A member who did not attend the meeting of the Division at which the Representative was elected had no part in his election, and this fact may have put a certain strain upon his loyalty in such a crisis as now exists. By a recent amendment of the by-law a Division may so alter its rules as to provide that in future the election of its Representative may be made by voting papers sent to each member of the constituency. The Representative Meetings have been, and it would seem must always be, deliberative assemblies, and the object of deliberation is to form opinion, not merely to register preformed decisions. In ordinary circumstances, when Representatives found that there was a majority or considerable minority opposed to the policy they were instructed to support, it was usually easy to postpone decision to the next annual meeting, the intervening period allowing time for the discussion of opposing arguments among members in Divisions. But the circumstances of the past year have not been ordinary, and there has been no time to give the slow moving machinery of reports to and meetings of Divisions full play.

The Representative Meeting in November was confronted not only by a number of new clauses and amendments already adopted by the House of Commons, but by a bill still in the fluid state, still being altered from day to day by the Government, whose decisions were automatically registered by the House of Commons—that is to say, the meeting had to deal not only with facts, but with probabilities. As may be seen from the reports of meetings of Divisions, and the voluminous correspondence recently published, many members consider that the meeting in November blundered. It is therefore reasonable to afford it an opportunity of reconsidering the matter after the further discussions which have already taken place in the Divisions, and which will take place at meetings held to consider the report now promised.

EXPERIMENTAL THERAPY OF CANCER.

THE results of an important and interesting experimental research into the therapy of malignant growths were recently communicated, as our Berlin correspondent records, to the Medical Society of Berlin by Professor v. Wassermann, Dr. Keysser, and Dr. Michael Wassermann. The communication was of a preliminary character, and the details of the experiments are reserved for future publication. The experiments were made upon mice suffering from carcinoma or sarcoma. In some of the mice the tumours had arisen spontaneously, but in the majority of cases they had been produced by inoculation from mice similarly affected.

In presenting a brief account of their results the authors were careful to point out that these are at present of merely scientific importance, and that there is no reason to suppose that the precise means which they have found effective in their animal experiments would be successful in the case of man.[1]

Encouraged by the brilliant researches of Ehrlich, whose educated search for poisons sufficiently selective in their action to kill protozoan parasites whilst leaving the cells of the host uninjured, has been attended with so much success, Professor Wassermann and his collaborators have been striving to find a chemical substance which, introduced into the blood, shall exert an action sufficiently differential to destroy the cells of a new growth without endangering the life of the animal.

This must not be regarded as by any means a hopeless quest, for the selective affinity towards and relative susceptibility to chemical substances exhibited by the various tissues and even different cells of the same tissue are indeed striking. To this is due the fact that one substance is a narcotic, another raises the blood pressure, whilst a third stops the heart. The specific action upon particular cell groups is just as strikingly manifested when substances of closely related chemical constitution are considered, such as morphine and apomorphine, or the various toxic proteins of animal and vegetable origin. It is, therefore, not unreasonable to believe that these specific affinities for particular chemical groupings may be exploited for therapeutic purposes to an almost indefinite extent by careful and patient study of the relationship of particular cells to substances of definite chemical architecture.

Although the subject of chemo-therapeutics is in its infancy, important guiding principles have been laid down. They are largely due to the genius of Ehrlich. A general protoplasmic poison such as mercury or arsenic displays little selective action. To make such a poison specific it must be, to use a crude analogy, wrapped up in a parcel which is chemically more attractive to the protoplasm of particular cells than to cells in general. Acting on this principle Ehrlich introduced arsenic into various organic compounds, and by modifying with the greatest skill the precise nature of the chemical configuration of the latter, ultimately obtained arsenic compounds for which the protoplasm of trypanosomes and spirochaetes exhibited an avidity considerably in excess of that manifested by the cells of mammals harbouring these parasites. He thus obtained a measure of specificity sufficient to afford a margin of safety for therapeutic use.

Malignant growths are due to a kind of civil war in which the invaders consist of anarchist members of the community and their progeny, and it might not unreasonably have been supposed that the selective affinities of, for instance, the epithelium of the mammary gland and the cells of a mammary carcinoma would not greatly differ. Nevertheless, the possibility of a rational therapy for new growths rests upon the assumption that sufficient difference exists to enable selective action to be manifested.

Undismayed by the difficulties of the task, the authors undertook the search for a chemical substance capable of such selective action. For reasons which are not now material, their attention was first drawn to the action of salts of selenic and telluric acid. Selenium and tellurium are elements belonging to the same group as sulphur, but the selenates and tellurates, unlike sulphates, are highly poisonous, possibly owing to the ease with which they part with their oxygen within living cells, the selenium and tellurium being reduced and deposited.

The injection of these salts directly into the new growths was followed by their more or less complete destruction, but, as the authors point out, for therapeutic purposes the agent must find its way to the carcinoma cells when introduced into the blood stream. The introduction of selenates and tellurates into the veins was not attended by a satisfactory result.

When injected in sufficient quantities into the blood stream of mice with carcinoma they killed the animals, but smaller amounts had no effect upon the growths; in other words, they exhibited no selective action. Attempts were therefore made to combine selenium and tellurium with an organic substance in the hope that some selective action might occur. Various members of the eosin group of dyestuffs were experimented with, as these possess great power of penetration throughout extravascular areas of the tissues. Some hundreds of different preparations were made and tried without result, until finally a compound of eosin and selenium was produced, and proved to exert a specific destructive effect upon the tumour cells.

The authors give no details of the composition and properties of this substance beyond the statement that it is readily soluble in water and that more than 2½ mg. is required to kill a healthy mouse. The selective absorption of the substance is strikingly shown by the following experiment: If 2½ mg. were injected into the veins of a healthy mouse the animal became pink all over, but the same quantity introduced into an animal bearing a tumour produced little coloration of the surface of the skin. When, however, in the latter case, the tumour was examined it was found stained an intense red.

The account given by the authors of the successful cases of the treatment is briefly as follows: After the third injection the tumours were distinctly softer, and after four or five injections became cystic. Further doses, making 6 to 8 in all, led to diminution in size and absorption. In ten days the growths had disappeared. Examination of the tumours at various stages of the treatment showed that the whole structure had liquefied, and in the later stages no trace of the carcinoma cells was to be found.

In animals which had received a sufficient number of injections to cause the apparent disappearance of the tumour no recurrence has yet, after some months, taken place; but in inadequately treated animals, although the treatment was followed by softening and diminution in the size of the growth, rapid recrudescence occurred.

It was not found possible to treat successfully growths of larger size than a cherry. With larger

[1] A preliminary paper is published in the *Deutsche medizinische Wochenschrift* for December 21st, 1911, s. 2389.

growths the same initial changes occurred, but the animals always died. In the opinion of the authors, these deaths were due to the rapid absorption of the disintegrated contents of the tumours.

Whilst anxious not to raise false hopes, the authors express the opinion—which, considering the reputation as an experimenter possessed by Professor von Wassermann, we believe to be justified—that an important beginning has been made in a direction in which further research may ultimately lead to the discovery of a useful treatment for malignant disease.

Selenium and tellurium are members of the same group of elements as oxygen and sulphur, and resemble the latter in most of their compounds. The atomic weights of these three elements are: Sulphur 32, selenium 79.2, tellurium 127.5, and in most of its properties selenium is intermediate to the other two, thus conforming to the general rule for such groups; for example, selenium is less electronegative, or acidic, in character than sulphur, and tellurium is less so than selenium, and corresponding differences are to be found in their various compounds. Selenium is a widely distributed element, but is only found in small quantities; the chief source is iron pyrites (FeS_2) in which a part of the sulphur is replaced by selenium; tellurium is comparatively rare. Both are non-metals, but, like like sulphur, they occur in several allotropic forms, and one form of each has a metallic appearance, and possesses some of the properties of metals. The three series of salts—selenides and tellurides, selenites and tellurites, selenates and tellurates—correspond respectively to sulphides, sulphites, and sulphates; fairly numerous organic compounds of the two elements have also been prepared. Most of the selenates and tellurates are soluble. The sodium, potassium, and ammonium salts (Na_2SeO_4, Na_2TeO_4, etc., most of them also containing water of crystallization) are colourless crystalline compounds soluble in water (sodium tellurate only slightly so). The compounds of selenium and tellurium with hydrogen are unpleasant-smelling and poisonous gases, hydrogen selenide (H_2Se) being more poisonous than hydrogen sulphide (H_2S), and hydrogen telluride (H_2Te) more so than the selenide. Small traces of selenium and tellurium compounds were formerly of fairly common occurrence in bismuth salts; they were held to be objectionable on account of the formation of hydrogen selenide and telluride in the stomach. The tests ordered in the *British Pharmacopoeia* for bismuth salts include one for proving their absence, and the bismuth salts supplied for medicinal use in this country now practically never contain any.

THE INTEREST OF THE PUBLIC IN CONDITIONS AND TERMS OF MEDICAL SERVICE.

Sir Clifford Allbutt, in a letter to the *Times* (January 3rd), has put before the public, with his accustomed force and eloquence, a point of view to which neither the Chancellor of the Exchequer nor his actuaries seem hitherto to have given any attention. The matter has been canvassed before, but has never been so well put, nor with so much authority. He asks the public to consider the influence which the Insurance Act must have upon the development of medicine in regard to the very end at which the Act professes in part to aim. The Chancellor of the Exchequer, knowing little or nothing of modern medicine or its business, has been content, Sir Clifford Allbutt says, "with an antiquated notion of medicine and of medical service; he took for granted without inquiry a notion built of some vague knowledge of village clubs and of the old-fashioned *vade mecum* way of doctoring. This is, 'for such and such a disease such and such a drug; take the mixture, drink it regularly, and get well if Nature will let you.' And if our people have ceased to check the doctor's bill by the pill boxes, bottles, and pots on the shelf, even Cabinet Ministers have not escaped from this ancient habit of thought."

As Regius Professor of Physic in the University of Cambridge he tells the public that the younger men who are passing from the universities in recent years "are entering upon medicine as into a new calling, with new ideas, and with changed views of their portion in it. Many of these abler and more accomplished men are now passing beyond the large towns into smaller towns and villages, some of them preferring a country life. Thus they are missionaries, carrying with them these new ideas of medicine, and developing new modes of practice. With these men, if not discouraged, lies the future of medicine in its popular sense; and they have chosen medicine as a calling chiefly because of its new scientific values, and of its enormously increasing power over disease. . . . Thus the hereditary maxims and craft rules of the elder medicine, maxims and rules which made current practice easy and comparatively irresponsible, are dissolving into wider conceptions and a larger scope of work which demand a far more arduous and far more responsible service. To this service the modern medical student in town or country is ready to devote himself."

Sir Clifford Allbutt then shows that a modern physician—in which term he includes the modern practitioner, to whatever side of the profession he may be given—perceives that while the treatment of disease is not independent of hereditary lore and cleverness of resource, yet "it is first and last a matter of searching diagnosis; and, every day, diagnosis is opening out as a more and more abstruse and costly affair. In therapeutics much may depend upon the precise administration of a drug at a cardinal moment, a drug used economically and in a timely manner; but it is no longer a matter of continual pills and potions. Therapeutics consists even more in rearrangement of life, and the aid of other, often physical, means of an elaborate kind—such as specific exercises, baths, climate, rest, massage, electricity, and so forth—means, it is true, not commonly at the service of the general practitioner, but of which he brings a full knowledge from his schools, and on which he is able to advise intelligently. And for a more searching diagnosis he can do still better. The man who leaves us for practice is schooled in all these methods; he can examine the blood, counting and comparing its corpuscles; he can perform the ordinary bacterial examinations; he can estimate the chemical values of secretions and excretions; he is skilled in the use of instruments of precision, of blood pressure gauges, endoscopes for the eye, the larynx, and other internal parts; he knows something of optics, and can indicate precisely where more of this kind of investigation can be had, and to what advantage. But all this means time and money, and a long and costly technical education."

Sir Clifford Allbutt gives as a concrete instance the Wassermann reaction, and explains its purport, the skill required for its proper application, and its cost. He then turns to the application of his general argu-

ment, and says: "Now if we are to say that the general practitioner is to be but a stop-gap, and that every malady of importance is to be sent to some central institution, is not this to take the heart out of our very efficient students, and to degrade the career of medicine? Gloss it as we may, contract practice will stand lower in public esteem, and will be of lower average efficiency and much less humane; it will damp the aspirations and blot the high-minded ideals with which I, who know, say that the young physicians of to-day are entering our profession; and it will push them back to old-fashioned routine and to ill-remunerated and therefore undervalued service."

In a brief discussion of the argument for the continuance of the contract system founded upon the existence of club practice, he expresses the opinion that the system was breaking down, and that where such work made the bulk of the practice it was perfunctorily done. But he goes on to state that where a club formed no great bulk of a practice "the work has been done better, often admirably, because it has been regarded as hospital work has been regarded by consultants, and been done for love of the profession, for goodfellowship and humanity, and, it is fair to add, for some advantage of *status* and experience, but not for pecuniary profit."

He concludes his argument by asking the public if the new machinery is calculated to develop the backbone of medicine on new and growing lines, or if it is to sweep us back upon old methods. "Can the answer be doubtful? The solution is no contract, but payment for work done on a standard tariff."

Again we may resort to the columns of the *Times* to show the view which the public is being advised to take. In a closely reasoned article published last week (December 29th, 1911) our contemporary returned to a calm consideration of the importance, from the point of view of the public, of ensuring an arrangement with the medical profession on equitable terms of service and remuneration if the Act is to attain the objects which the public desires to flow from it. The argument may best be stated by way of quotation. It is first pointed out that "the primary object of the Act is to provide better treatment in illness for the poorer classes than they can otherwise afford at home. That treatment must be paid for, but the Act does not make provision for adequate payment. On the contrary, its financial stability rests on an estimate of wholly inadequate payment, while it contemplates that method of service and remuneration which experience has proved to be the most unsatisfactory, and it leaves all the details to be wrangled over and fought for all over the country. . . . The approved societies will control the Insurance Committees, and they will try their utmost to secure medical treatment on the cheapest terms. . . . If they succeed in their intentions, they will secure a medical service which will resemble the work of the sweated alien; it will be cheap—and nasty. In some favourable districts it may be found possible, but it will not be satisfactory; it will depend on underpaid and overworked labour. In other districts, however, a medical service on terms approaching those contemplated by the Act is totally impossible. Those are the rural districts, in which the practitioner has to cover great distances to get from one patient to another. Under a scale of 6s. a head he must have 1,000 patients in order to make £300 a year, and this sum would have to include not only drugs, but dressings, bandages, splints, anaesthetics, and all other appliances. How is a country doctor to attend to all these patients scattered over a radius of twenty or thirty miles?" The conclusion drawn from all this is that the medical profession "has the clearest and most unequivocal ground for making an absolute stand on this question. Unless fair terms are conceded, the medical treatment will be a fraud and a make-believe, and the first object of the Act will be nullified. Their interest is the public interest, and the public are quite capable of understanding that point. The question is, What are fair terms and how are they to be secured? And here, too, the profession, if they are to carry the public with them, must be practical and united. It is useless to go back on what is past and indulge in recriminations."

The opinion is expressed that the Representative Meeting in November made a mistake, and failed to give expression to the wishes of the bulk of the profession, and that what its members now have to do is to unite in retrieving the error then made. It is recognized that they are united in intention, and that the British Medical Association is the only existing organization which can give expression to that intention in united action. The practical policy suggested by our contemporary at the present moment is to prepare for a Special Representative Meeting by the discussion in each Division of the questions of the wage limit and the rate of remuneration. This procedure, it is argued, would lead to the adoption "of a standard and uniform demand, with provision for a certain amount of local modification; and the profession could make the concession of these terms the condition of working the Act. This is a practical plan. Some time would be required to carry it out; but there will be time. An enormous amount of preliminary work has to be done by the Insurance Commissioners before the question of benefits is reached at all, and by the time it is finished the medical profession should be ready with their considered and united requirements. If they set about this in an earnest, practical, and reasonable manner, dropping recrimination, or keeping it to themselves, they will carry the public with them."

THE INSURANCE ACT.

THE text of the National Insurance Act, 1911, reprinted from the official text published by authority, is contained in the SUPPLEMENT for this week as issued to members in the United Kingdom. For convenience of reference, an alphabetical index to its principal provisions has been compiled, and is printed at the end of the text. The Insurance Commissioners have to make regulations on a large number of important matters, including many which will nearly affect the administration of medical benefit, and it is desirable that there should be no undue delay in the preparation of such regulations which, before being promulgated, ought to be submitted to the medical profession for its criticisms. The same observation applies to the regulations affecting sanatorium benefit, in the drafting of which it will be fatally easy to make mistakes, unless full advantage be taken of the experience of those who have practical knowledge both of the organization and administration of a properly co-ordinated scheme for dealing with the prevention of tuberculosis.

THE TETRARCHY.

THE original idea of the National Insurance Bill was to have a single scheme, as nearly as possible uniform, for the United Kingdom, including Ireland, administered under a board of Commissioners, one and undivided. On getting to close quarters with the details of the scheme, the Chancellor of the Exchequer seems to have become

convinced that it would be necessary to set up boards of Commissioners in Scotland and Ireland, and, having come to this conclusion, it was only natural that he should have been ready to extend the same privilege to the Principality of Wales. This decision, which was accepted by the House of Commons about the middle of November, while the bill was in Committee, did not altogether please some of the supporters of the Government, who fear that it may interfere with the uniformity they desire, and it must undoubtedly tend to introduce some additional complications into a scheme already very full of difficulties and complications, financial and other. With the view of diminishing occasions for stumbling, a Joint Committee was set up, consisting of representatives of the several bodies of national Commissioners, with certain additional members. The duties of this Committee specified in the Act are chiefly of a financial nature, but other powers and duties of the several bodies of Commissioners may be devolved upon them in accordance with regulations which are to be made by the Treasury and laid before Parliament. Mr. C. F. G. Masterman, M.P., has been appointed Chairman of this joint committee, and will represent it, and also apparently the several national boards of Insurance Commissioners, in the House of Commons. Mr. Masterman is Parliamentary Secretary of the Home Office, and was Parliamentary Secretary of the Local Government Board in 1908 and 1909. The other members of the board are Sir R. L. Morant, who will act as Vice-Chairman, the Chairmen of the several bodies of Insurance Commissioners, the Deputy Chairman of the English board, Mr. J. S. Bradbury, C.B., the Chief Registrar of Friendly Societies, Sir John Struthers, K.C.B. (Secretary of the Scottish Education Department), and a woman whose name is not yet announced. It seems probable that the influence of this Joint Committee in producing uniformity of action throughout the tetrarchy will be very considerable, at any rate at first, but until the functions, other than financial, which are to be assigned to it are made known by the publication of the Treasury regulations, it is impossible to be confident on this point. The establishment of such a Joint Committee undoubtedly lends weight to the suggestion made in a letter published in the SUPPLEMENT for this week by Dr. H. F. Oldham of Morecambe, who took an active part in the work of the first two or three Representative Meetings, as those who attended them will well remember. Dr. Oldham suggests that the Representatives, at the meeting which he anticipated would be called, should be empowered by the Divisions to elect from among themselves a Central Medical Committee for the purpose of dealing directly with the Insurance Commissioners. Such a Central Medical Committee should, he suggests, be empowered to lay before the Commissioners the minimum terms on which the profession will decide that it might be willing to act. The terms would include an absolute guarantee of the six cardinal principles of the Association, the acceptance by the State of all the risks involved in providing medical benefits, that the insurance should cover the insured under all circumstances and everywhere in Great Britain, that the disciplinary control of the members of the medical profession should be entirely in the hands of the profession, and that the indiscriminate use of prescriptions by pharmacists must be prevented. He believes that the Insurance Commissioners would be in a position to undertake absolutely to guarantee these demands, and that in this way local bargaining between local Medical Committees and local Insurance Committees might be avoided. If the Insurance Commissioners refused to grant or to provide the minimum asked, it would be the duty of the Central Medical Committee to decline to negotiate further, and of the British Medical Association to call on the profession to refuse service of any sort under the Act until its demands had been accepted. There is no doubt that the tetrarchical system of administration involves a certain risk of disunion between the profession in the four countries, a risk which would be obviated by the appointment of a central or joint medical committee corresponding with the Joint Committee of Commissioners, as suggested by Dr. Oldham. In Scotland the profession seems in a fair way to avoid the risks attending local bargaining by a mode of procedure which will eventually result in a national discussion with the Scottish Insurance Commissioners, and therefore comes very near to Dr. Oldham's plan. An identical course of action is being taken by the medical men in one part of Scotland after another. The policy adopted is to reaffirm the six cardinal principles of the British Medical Association, and to at once give the Scottish Commissioners formal notice that the profession in the district will absolutely refuse to work under the Act unless the regulations framed by the Commissioners are consistent with the concession of the six cardinal principles.

MR. STIGGINS IN POLITICS.

THE *Nation*, which in spite of its title is a bitter party paper, a fortnight ago wept salt tears because it had discovered, as it thought, that "the temper of science at the present day is . . . strangely conservative." It would be a very awkward fact for the party the *Nation* befriends were it true, but as Fluellen observed, "There is occasions and causes why and wherefore in all things," and the notion is founded on the circumstance that 116 Fellows of the Royal Society out of some three or four hundred responded to Sir William Ramsay's round robin asking whether they approved of the National Insurance Act by saying that they did not; so that the truth of the *Nation's* assertion is not quite conclusively established on a sound mathematical or scientific basis. As long as science, we are told, had something to fear from religious intolerance it was, on the whole, allied with liberty, "and through liberty with the cause of democracy in general." Alas for the good old days! Now science shows the world that horrid bogey biology, and has learnt "to disparage the value of institutional reforms." Nevertheless we are allowed to take some comfort from the assurance that cause and effect are to be found in the life of society as elsewhere, and are exhorted to a dispassionate observation of the manner of their working. The injunction is immediately illustrated by this strange piece of incoherence: "The science of society . . . has to recognize that the fuller and deeper, and therefore the more scientific, view of its peculiar field is that which appeals to the religious rather than the scientific mind in the ordinary sense of the term." The appeal to religion "in the ordinary sense of the term" to justify your own political brand of politics, was probably old in the reign of the Pharaoh who was drowned in the Red Sea, but it does not grow sweeter with age. Might it not be well for the *Nation* to bethink itself of the fate that at long last, as they say in the Sister Isle, befell Mr. Stiggins? Was it not the shepherd who exhorted Mr. Sam Weller "to abstain from all hypocrisy and pride of heart; and to take in all things exact pattern and copy by him (Stiggins), in which case he might calculate on arriving, sooner or later, at the comfortable conclusion, that, like him, he was a most estimable and blameless character, and that all his acquaintances and friends were hopelessly abandoned and profligate wretches. Which consideration, he said, could not but afford him the liveliest satisfaction." Again, last week, the *Nation* lectured the medical profession very much in the way in which an old nurse rebukes a wayward boy for pouting at the food provided by his kind parents, because it had dared to find fault with the table which Mr. Lloyd George's actuaries had spread for it. "We hope and believe," it said, "that the Government suggestion of a capitation fee of 6s. will be realized. Such

a grant"—mark that the word is not dole—"gives a doctor £300 a year for 1,000 patients, at the rate of forty-five visits a day. This, in addition to private practice, would be enough for town doctors. Country medicals," our good grandam graciously admits, "might fairly ask for better terms." Why "better terms"? Why not say more money? Something under fourpence-halfpenny a visit is "enough for town doctors"! and "thoughtless spirits" are to take note not to ask for more. For one set of people who think themselves superior in intelligence and position to tell another set of people they believe to be inferior in these respects what they ought to be satisfied with, what is "enough" for them, is a very old song. It might be sung to the same tune as the ditty, which the "advanced thinkers" of a generation or two ago thought so consummate a piece of satirical wit, the ditty which ends, if we remember right, with the lines:

> God bless the squire and his relations,
> And keep us in our proper stations,

or words to that effect.

UP-TO-DATE QUACKERY.

THE results of the analysis of two nostrums put forward for the cure of a large number of complaints are published in this issue. The advertisements by which these nostrums are commended to the public in each case furnish excellent illustrations of the way in which the makers of proprietary medicines are quick to take advantage of the slight smattering of scientific terms which the public possesses, and the sort of familiarity with the progress of medical research that may be obtained by glancing at the scrappy paragraphs published by some of the more widely read daily and weekly newspapers. However favourable dense ignorance may be to the success of the charlatan, the ignorance which believes itself to be enlightened and educated is still more so. In the advertisements of both the preparations in question, it is claimed that they embody the latest results of scientific research, and these claims are supported by meaningless talk about serums, "organic reconstituent elements," "a vital extract ($C_2H_5N_1$)" "red corpuscles or phagocytes," antitoxin, etc. The tenor of the statements made points to both mixtures containing the "orchitic liquid" prepared by Brown-Séquard from testicles, or some similar preparation; but analysis showed that if any organic matter of such a kind were present at all, it was in exceedingly small quantity; the principal constituents of the one were alcohol and sugar, and of the other small doses of glycerophosphates of iron, magnesium, sodium, and quinine, with glycerine. The price charged, though very different in the two cases, is, needless to say, a liberal one. It is interesting to note that in one advertisement it is thought necessary to say, "Osogen is not a secret remedy"; this is not the only case among recent advertisements of proprietary medicines in which it is claimed that the article in question is "not a secret remedy"; and the anxiety on the part of the proprietors to make the public believe that their articles are not of the class dealt with in the book *Secret Remedies* may be regarded as testimony to the effects which have followed its publication.

THE INTERNATIONAL OPIUM CONFERENCE.

THE International Opium Conference which has been sitting at The Hague since December 4th, 1911, adjourned for the Christmas recess on December 23rd, and will, it is understood, resume its sessions on January 8th, 1912, when an early completion of its labours is anticipated. The main object of the conference is to put into the form of an International Convention the resolutions which were arrived at by the International Commission held at Shanghai in 1909. A Conference, diplomatically speaking, is a far more important event than a Commission. The representatives of the different nations attend as plenipotentiaries, with authority to sign, subject, of course, to ratification by their respective Governments, the articles of the convention and protocols which they prepare. Twelve nations have sent representatives to the Conference at The Hague, the Dutch Government once again having afforded hospitality at that famous city of diplomacy to those engaged in an international work alike of high policy and of humanitarian endeavour. The meetings are held in a chamber in the Binnenhof, adorned with the paintings of Lairesse. The proceedings were opened on December 4th by a welcome pronounced by M. Van Swinderen, the Dutch Minister for Foreign Affairs, and Bishop Brent, one of the American delegation, was elected President of the Conference. The British plenipotentiaries are the Right Hon. Sir Cecil Clementi Smith, G.C.M.G., Sir William S. Meyer, K.C.I.E., Sir William J. Collins, D.L., M.D., F.R.C.S., and Mr. M. W. Max Müller, C.B., M.V.O. The other nations represented are the United States, Germany, France, China, Italy, Japan, Netherlands, Persia, Portugal, Russia, and Siam. The press is not admitted to the sessions, and the official language is French, though speeches are, it is understood, often made in English. Many technical questions of a pharmacological nature have, we understand, arisen, and these have been referred to a Technical Commission composed of those delegates who have medical or chemical qualifications. Nine nationalities were represented on this Technical Commission, and the members and the names they represented were as follows: *Germany*, Dr. Kerp, of the Imperial Health Office of Berlin; *America*, Dr. Hamilton Wright and Mr. Henry J. Finger; *China*, Dr. Wu Lien-Teh, who fought the plague in Manchuria; *France*, Dr. Gaide, Médecin-Major in the Indo-Chinese colonies of France; *Great Britain*, Sir William Collins, Vice-Chancellor of the University of London; *Italy*, Professor Rocco Santoliquido, M.P.; *Japan*, Dr. Tomoe Takaki, Director of the School of Medicine in Formosa, and Dr. Kotaro Nishizaki, Director of the Hygiene Laboratory at Yokohama; *Netherlands*, Dr. J. G. Scheurer, Member of the Second Chamber; *Russia*, Dr. Chapirow, Honorary Physician to the Czar. Of this Commission Sir William Collins was elected President, and Dr. Wu Lien-Teh Honorary Secretary. Certain resolutions passed by the Conference, dealing with the limitation of the production and distribution of raw and prepared opium have already appeared in the press. It is understood that, mainly on the proposal of the British representatives, steps are also being taken with a view to control the manufacture and distribution of morphine and cocaine. The question of "anti-opium remedies," so much puffed in China, is also under consideration.

THE NEW YEAR HONOURS LIST.

THE five knighthoods conferred on members of the medical profession in the New Year Honours list exemplify the great variety of duties which medicine is called upon to fulfil in the modern State. Sir George Henry Savage is one of the most distinguished of those physicians who in England have devoted themselves to the study of mental diseases. He was formerly Physician and Superintendent of Bethlem Royal Hospital, and is now Consulting Physician for, and Lecturer on, Mental Diseases at Guy's Hospital. Sir James Mackenzie Davidson was at one time Lecturer on Ophthalmology in the University of Aberdeen. When the *x* rays were discovered he turned his attention to their application in diagnosis and treatment, and has made many valuable contributions to this department of medicine in relation especially to stereoscopic radiography. Sir Robert John Collie is Medical Examiner to the London County Council and the Metropolitan Water Board, and has written a work on medical evidence and the laws relating to compensation for injury, a subject to which he has given special attention.

Sir Bertram Windle, F.R.S., now President and Professor of Archaeology, University College, Cork, was formerly Professor of Anatomy and Dean of the Medical Faculty of the University of Birmingham. Since his appointment, University College, Cork has made great strides, and seeks the establishment of a separate university. Sir J. Hawtrey Benson, President of the Royal College of Physicians in Ireland, is Consulting Physician to the Royal City of Dublin Hospital and Medical Adviser in Ireland of the Colonial Office. In the same list the honour of C.B. is conferred on Dr. Arthur Newsholme, Principal Medical Officer to the Local Government Board for England and Wales, and formerly M.O.H. for Brighton; and that of C.M.G. on Lieutenant-Colonel David Prain, F.R.S., who was Director of the Botanical Survey of India and Superintendent of the Royal Botanic Gardens, Calcutta, until his retirement from the Indian Medical Service in 1905, in which year he was appointed Director of the Royal Botanic Gardens, Kew. We may note also as of interest to the medical profession that the honour of knighthood has been conferred on the Principal of the University of London, Dr. H. A. Miers, formerly Professor of Mineralogy at Oxford, and on Dr. E. B. Tylor, Emeritus Professor of Anthropology at Oxford.

NOTIFICATION OF BIRTHS ACT.

AT Worcester in the last week of December three medical men were each fined £1, including costs, for failure to comply with the Births Notification Act, which has been adopted in that city. On the same occasion two of the fathers concerned were also summoned, but in the one case the summons was withdrawn, and in the other a fine of only 2s. 6d. was inflicted, on the ground that the case was the first in which a parent had been prosecuted. Attention is drawn to the latter circumstance, because when coupled with the other prosecutions recorded, it indicates decided lack of discretion on the part of the health authorities of the city of Worcester. Under the Notification Act parents and medical attendants stand on the same footing legally in regard to their liability to prosecution if notification of a birth is not made by one or the other of them in any area where the Act has been adopted, but morally it seems to be generally admitted that the responsibility rests really upon the parents. Medical men, of course, can never benefit personally by the operation of the Act, but parents may do so since its main purpose is to secure that health authorities, by being made aware of the birth of a child, shall be in a position to aid its parents in its management by promptly placing at their service a health visitor and any other assistance deemed to be required. In any case, the number of occasions on which we have had to record prosecution of medical men is, in comparison to the large number of areas where the Act is in force, relatively very small. This paucity is natural, for apart from considerations of mere fairness a wise administrator would instinctively abstain from prosecuting medical men for defaults under the Act unless and until every effort to educate parents in their duties in this matter and to secure their performance had failed to result in a reasonably high ratio of notifications of births. Any other course indeed would tend to provoke among medical men a most undesirable feeling of hostility towards the health authority. Apart from this, most wise administrators endeavour to avoid the methods of bureaucracy such as are represented by special endeavours to secure notification in the very cases in which birth notification is least likely to result in benefit, namely, those in which the children are in the care of medical men. We regret, therefore, to have to record the prosecutions in question and doubt very much if in the long run Dr. Mabyn Read, who, as M.O.H. of Worcester, must presumably have either initiated or approved them, will find that he has done the town any good.

SIR JAMES BARR ON THE INSURANCE ACT.

SIR JAMES BARR has not had altogether a "good press" for the letter published in our issue of last week, which he addressed in duplicate to the *Times* and the BRITISH MEDICAL JOURNAL. The assertion with which he set out, that the Insurance Act is a long step in the downward path towards socialism, was open to the obvious retort that the scheme has been steadfastly opposed by all socialist organizations which have said anything about it, and in particular by the Fabian Society, which so far agrees with Sir James as to consider that it is no better than a "fraud"—in its opinion—on the working classes. Nor have the grounds of his attack upon the sanatorium benefits provided under the Act met with universal approval, because apparently the public is not yet prepared to accept his doctrine as to the sterilization of the unfit. On the other hand, his statement of the real argument for the medical profession in respect of the actuarial provisions for medical and surgical attendance has been received with sympathy and approval, although even on this head one of our correspondents joins issue with him. His denunciation of the absurd rate of 6s. a head—that is, 4s. 6d. a head for the medical man and 1s. 6d. a head for the pharmacist—is forcibly phrased, but it expresses the settled opinion of the profession at large. The amount, as he says, is utterly inadequate for an efficient service, and his application of the word "fraud" to a service that is not efficient will not be criticized.

THE TUBERCULOSIS NOTIFICATION ORDER.

THE Order of the Local Government Board making pulmonary tuberculosis compulsorily notifiable came into force on New Year's Day. It is designed to complete the organization for ensuring the notification to health authorities of all cases of the disease. A medical practitioner is not required to notify any case which has already to his knowledge been notified, either under this Order, under the Poor Law Order (1908), or under the Hospitals Order, if the notification has been made to the medical officer of health of the area within which the patient resides; but if a patient who has been notified in the area of one sanitary authority removes into another area, a fresh notification to the medical officer of health of the new area should be given. Patients in a prison, reformatory, school, or lunatic asylum, and patients in a Poor Law institution or under the care of a Poor Law district medical officer are not to be notified under this Order, nor are applicants for life insurance, nor a passenger or member of the crew of an emigrant ship, discovered to be tuberculous by a medical examination in either case. By a curious and out of date anomaly of British law, the Order does not apply to an "inmate of any building, ship, vessel, boat, tent, van, shed, or similar structure belonging to His Majesty the King." It is recognized that the local authority should be in a position to offer sanatorium treatment, and in the memorandum accompanying the Order it was stated that the Public Health Act, 1875, and the Public Health London Act, 1891, gave local authorities power either to provide sanatoriums themselves or to contract for the use of such institutions. It was also pointed out in the memorandum that treatment in an institution is not always necessary or desirable, and that there are many cases which under suitable instruction and supervision may properly be treated in the patients' own homes. Consequently, the local sanitary authority is empowered to supply such medical or other assistance and facilities for the detection of pulmonary tuberculosis for preventing the spread of infection and removing conditions favourable to infection.

THE LUNACY COMMISSION.

THE Lord Chancellor has appointed Mr. Barnard Thornton Hodgson, Barrister at Law and Secretary to the Commissioners in Lunacy, and Dr. Charles Hubert Bond, Medical Superintendent of the Long Grove County of London

Lunatic Asylum, to be Commissioners in Lunacy. Mr. Oswald Eden Dickinson, Barrister at Law and Secretary to the Lord Chancellor's Visitors in Lunacy, has been appointed, with the approval of the Lord Chancellor, Secretary to the Commissioners in Lunacy, in the place of Mr. Hodgson. These appointments are made under the Lunacy Act Amendment Act passed early last month. It was originally intended to amalgamate the Masters in Lunacy with the Commissioners in Lunacy, and to comply with the strong recommendation of the Royal Commission to the effect that two additional medical Commissioners should be appointed. The proposal to amalgamate the Masters and Commissioners in Lunacy was dropped in consequence of the opposition of the Bar, and the success of this opposition is further evidenced by the appointment of another Legal Commissioner and of only one additional Medical Commissioner.

THE INTERNATIONAL MEDICAL CONGRESS.

WE publish this week as an inset details as to the organization of the Seventeenth International Congress of Medicine. A full programme of the Congress and its various sections will be issued not later than September 30th, 1912. To make room for it, it has been necessary to omit the EPITOME OF CURRENT MEDICAL LITERATURE. It will be seen that the date of the Congress has been fixed for August, 1913; the proceedings will extend over the week from the 6th to the 13th. The work will be distributed among twenty-two sections as follows: (1) Anatomy and Physiology; presided over by Professor Arthur Thomson, of Oxford. (2) Physiology, with Professor Schäfer, of Edinburgh, as President. (3) General Pathology and Pathological Anatomy; Mr. Shattock as President; a subsection of Chemical Pathology, presided over by F. G. Hopkins, D.Sc. (4) Bacteriology and Immunity, presided over by Professor Woodhead. (5) Therapeutics (Pharmacology, Physiotherapy, Balneology), of which Sir Lauder Brunton is President. (6) Medicine, with Professor Sir William Osler as President. (7) Surgery, presided over by Sir Watson Cheyne; with one subsection of Orthopaedics, of which Mr. Robert Jones is President; and one of Anaesthesia, general and local, presided over by Dr. Dudley Buxton. (8) Obstetrics and Gynaecology, the President of which is Sir Francis Champneys. (9) Ophthalmology, presided over by Sir Henry Swanzy. (10) Diseases of Children, of which Dr. Eustace Smith is President. (11) Neuro-pathology, presided over by Sir David Ferrier. (12) Psychiatry, of which Sir James Crichton-Browne is President. (13) Dermatology and Syphilis, of which Sir Malcolm Morris is President. (14) Urology, with Professor Hurry Fenwick as President. (15) Rhinology and Laryngology, presided over by Professor StClair Thomson. (16) Otology, of which the President is Mr. Arthur Cheatle. (17) Stomatology, presided over by Mr. Morton A. Smale. (18) Hygiene and Preventive Medicine, of which Dr. Newsholme is President. (19) Forensic Medicine, with Professor Harvey Littlejohn as President. (20) Naval and Military Medicine, presided over by Surgeon-General Porter, Director-General of the Medical Department of the Royal Navy. (21) Tropical Medicine, the President of which is Sir David Bruce. (22) Radiology, presided over by Sir J. Mackenzie Davidson. The official languages will be English, French, and German, which will be used by the central office for the transaction of international business; in the general meetings Italian will be employed, in addition to these languages. An appeal will shortly be issued to the profession for funds to meet the necessary expenses of the organization of the Congress, which, it is estimated, will be not less than £8,000, exclusive of the subscriptions of members. The King has graciously accorded his patronage to the Congress. All correspondence should be addressed to the Honorary General Secretary (Dr. W. P. Herringham), Seventeenth International Congress of Medicine, 13. Hinde Street, London, W.

STATE MEDICAL SERVICE AND CHARITY.

THE Chairman and Secretary of the Brighton Division of the British Medical Association ask for the support of every practitioner in the district in the action which they have taken, as a matter of urgency, with regard to the advertisement of an appointment for a consulting and operating surgeon to the Brighton Workhouse Infirmary, at an honorarium of fifty guineas a year. At an urgency meeting of the Medico-Political Committee of the Division it was decided in view of the decision of the Association that State medical service should be completely separated from charity, and of the decision of the committee that the appointment contravened this principle, the resolutions published in the SUPPLEMENT of December 30th, 1911, p. 712, should be brought before a special meeting of the Division summoned for January 12th. A circular was issued to every medical practitioner in the district, and in response an undertaking has been given by 222 medical practitioners. As the time which has elapsed since the issue of the circular has so far been short, it is expected—and we hope that the expectation will be fulfilled—that no member of the profession will apply for the appointment except on such terms as shall be approved by the Division. The guardians have been informed of the action taken on behalf of the Division, and their Workhouse Committee has decided to postpone further action for a short time.

THE NAVAL MEDICAL DINNER.

THE Naval Medical Dinner was held at the Criterion Restaurant, London, on December 19th. Surgeon-General Christopher Pearson presided, and there were present Sir James Porter, Director-General the Medical Department of the Navy, Sir W. Watson Cheyne, Sir W. Dyce Duckworth, Professor W. J. R. Simpson, C.M.G. (members of the Naval Medical Consultative Board), and more than fifty medical officers on the active and retired lists. At a meeting held before the dinner it was decided to make the dinner an annual event and to form a committee to carry out the necessary arrangements.

THE office of Medical Secretary of the British Medical Association is now vacant owing to the resignation of Mr. J. Smith Whitaker on his appointment to be Deputy Chairman of the Board of Insurance Commissioners. An advertisement for a successor appears this week in our advertisement columns.

THE TWO-POUND INCOME LIMIT.

A LETTER from Mr. James Boyton, M.P. for East Marylebone, published in the *Times* of January 1st, has raised a controversy as to the exact circumstances under which the amendment moved by Sir Philip Magnus on August 2nd, 1911, to fix in the bill an income limit of £104 a year in respect of medical benefit was negatived without a division. Mr. Boyton asserted that a division was not challenged in consequence of—

> a communication received from Dr. Smith Whitaker who was under the Gallery during the debate, to the effect, so far as I remember—Sir Philip Magnus has the letter—that whilst appreciating the efforts being made on behalf of the medical profession to secure the amendment, it would be better to drop the question until a later stage of the bill.

In the *Times* of the following day was published a letter from Mr. Smith Whitaker, stating that Mr. Boyton's account was seriously misleading upon questions of fact, and that it was clear that he could not have perused, recently at all events, the letter of which he professed to state the effect, or consulted those who had first-hand know-

ledge. Mr. Whitaker then gives the following account of the circumstances:

> The facts so far as I am concerned are that, during the debate on Sir Philip Magnus's amendment as to the £2 income limit, Sir Philip did me the honour to consult me on the question, upon which I learned that he and some of his colleagues who supported the medical profession were in doubt as to whether it would or would not be expedient in the interest of the medical profession to press the amendment to a division. I replied that I could not presume to advise as to what was the best course to take in a question which appeared to me to be one of purely parliamentary tactics. Subsequently a prominent Unionist, whose name I am prepared to give if I can obtain his consent, urged upon me that the Association should not insist on the amendment being pressed to a division, as there was evidently no support for it except on the Unionist side, and, even there, many who were sympathetic dare not vote for it, because it would be unpopular with their constituents. In these circumstances it was represented to me that we should not secure even a three-figure vote in favour, and possibly not more than 60. Such a result might injure the prestige of the profession in the House, and might prejudice our prospects of obtaining other amendments for which we were pressing. On my stating that I had already left the matter entirely in the hands of Sir Philip Magnus and our other parliamentary supporters, the member in question informed me that they did not appear to realize that I had given them a free hand (so far as it was in my power as an official of the Association to do so). Thereupon I wrote the letter to which Mr. Boyton alludes, and the purport of which he so entirely misrepresents, and gave it to the member in question, who undertook to give it to Sir Philip Magnus, as it would remove all doubt. I did not retain a copy, but saw it in Sir Philip Magnus's possession the same evening, and doubtless he is in a position to publish it. My recollection of the substance is, however, perfectly clear, namely, that I gathered that members of Parliament who were generally favourable to the profession considered that we should make a great mistake of tactics in pressing the amendment to a division; that, of course, I could not judge upon such a matter, but if he and our other parliamentary supporters who were co-operating with him considered that, on the whole, the interests of the medical profession would best be served by not pressing his amendment to a division, I felt sure that the British Medical Association and the profession generally would nevertheless feel satisfied that they (Sir Philip Magnus and his colleagues) had made every possible effort to secure that which the profession desired. In a later consultation with Sir Philip and other members I agreed, in view of their opinion, that it should go to a division, and that was my last word on the matter. I was surprised when a division was not taken, but heard afterwards that this decision was arrived at in a further conference in which I was not consulted.

As to the further conference mentioned by Mr. Whitaker, Dr. Addison, M.P., in a letter published in the *Times* of January 3rd, makes the following statement:

> Towards the end of the debate on Sir P. Magnus's amendment I was asked to attend an informal conference in the "No" lobby. I found there four or five well-known members of the Unionist Party, and they were good enough to ask my opinion as to whether it would be wise to divide or not. The substance of my reply was that I could only advise from the point of view as to what seemed best to me in regard to the medical service. At the same time, I did not disguise my personal opinion that the amendment in the form proposed would prove, if accepted, to be an administrative impossibility, would be unfair in its incidence, and that the claim that underlay it would be much better met by my own amendment which came later (now Section 3, Clause 15).
>
> With regard to the point at issue, I said that the general sense of the House was against the amendment, and that it was quite evident that only a small number of members would go into the lobby in support of it. This being so, it appeared to me that it would be unwise to divide, as the result would show that in that form the demand to which the profession attached such great importance could only obtain the support of a small minority of members, and would damage their case generally.
>
> I was not present when the decision was finally arrived at, but the reason for it was obvious to every one. The amendment did not commend itself to the House as the best way of meeting the difficulty. Not that the House was out of sympathy with the desire of the medical men that the amendment embodied, but because it was recognized that the proposal before it was not a workable one. I believe that Sir Philip Magnus acquiesced in the decision with great reluctance, desirous, as he always was, to carry out so far as he could the wishes of the medical men who form so large a part of his own constituency. The decision was, I am sure, a wise one and in the best interests of the medical profession, just as also the course of the debate made it inevitable.

In the *Times* of January 4th there is a letter from Sir Philip Magnus, in which he deprecates further discussion, which can serve no useful purpose, as it is too late, and continues:

> But lest it should be thought that I am withholding from publication the letter which Dr. Whitaker wrote in the House of Commons on August 2nd, I desire to state that the letter is not now, and, strictly speaking, never was, in my possession. The letter was shown to me and read by me, and it certainly influenced my decision; but after I had read it the letter was passed on to other members, and in whose hands it was ultimately left I cannot say.

In the same issue Sir Henry Craik, M.P. for Glasgow and Aberdeen Universities, published a letter, in the course of which he says:

> I had been present at the meetings with the Chancellor of the Exchequer, where the various points were discussed, and an amendment similar to that of Sir Philip Magnus stood on the paper in my name.
>
> I was present during the whole of the debate, and heard nothing whatever of any suggestion that we should not divide. I know nothing of preliminary discussions with Mr. Smith Whitaker, nor of any such mysterious conference of anonymous members in the "No" lobby as is referred to by Dr. Addison.
>
> It was only at the last moment that I found, to my astonishment—to give it no graver name—that no division was to be challenged. On my asking what was the reason for action so inexplicable, which I thought my own constituents would deeply resent, the letter from Mr. Smith Whitaker to Sir Philip Magnus was produced as the ground of the failure to take a division.
>
> Whoever told Mr. Smith Whitaker that only sixty members would support the amendment gravely misrepresented the facts. I am certain that the division would have been more close than most of the divisions on the bill, and many members who intended to support the amendment expressed to me their astonishment at the course taken. The only ground ever alleged to me for that course was Mr. Smith Whitaker's letter.

In commenting upon the formation of the Reform Committee in West London the *Times*, after referring to what it considers "the supineness of the Council in the present crisis," writes:

> Nor does the controversy over what happened in Parliament and why it happened . . . help to improve the impression. There was at least a very unfortunate misunderstanding then, and the desire for firmer and clearer counsels is intelligible. But we see no use in labouring this ancient history now. The efforts of the controversialists would be better directed to securing united action.

The Registrar-General desires to intimate to medical officers of health that they will be furnished about February 1st with particulars of transferable deaths registered during the last quarter of 1911. At the same time will be supplied to them the numbers of births to be added to or deducted from those furnished them by registrars in order to correct for lying-in institutions in accordance with the announcement made in a footnote to Table I of the Local Government Board. A copy of the Registrar-General's Manual of Causes of Death will, it is hoped, be sent to every medical officer of health during the latter part of the present month.

Canada.

THE CANADIAN PUBLIC HEALTH ASSOCIATION.

THE Canadian Public Health Association held its first Annual Congress in Montreal on December 13th, 14th, and 15th. This association was formally organized in October, 1910, when a conference of federal and provincial public health officers was held in Ottawa. An official organ of the society is published in Toronto, and is called *The Public Health Journal*. It seemed peculiarly appropriate that the first meeting of the congress should be held in Montreal, not only from a social point of view but because Montreal presents many enigmas of sanitation. The whole proceedings were carried out with enthusiasm and precision under the management of the president, Dr. Starkey, Professor of Hygiene in the McGill University, and promise much for the progress of sanitation in Canada.

Inaugural Meeting.

The first session was called to order at the Medical Faculty Building of McGill University on the morning of Wednesday, December 13th. The official opening of the congress took place at the Royal Victoria College, when the congress was formally opened by His Royal Highness the Duke of Connaught, the patron of the association. Her Royal Highness the Duchess of Connaught and Princess Patricia were also present. Many other distinguished persons were there, including Mr. R. L. Borden, the Premier of Canada; Sir Lomer Gouin, Prime Minister of the Province of Quebec; Mr. Martin Burrell, Minister of Agriculture, and the scene in the hall of the college was an unusually brilliant one.

Dr. Starkey opened the proceedings with an address of welcome to Their Royal Highnesses, and then read a letter from Lord Strathcona, in which the Canadian High Commissioner wished success to the association and enclosed a cheque for 2,500 dollars towards its expenses

Address by the Duke of Connaught.

When His Royal Highness rose to address the congress the entire audience stood and listened with deepest interest and respect to the Duke, who said:

"I wish to express my sense of deep satisfaction at being present at this meeting called to inaugurate the first meeting of the Canadian Public Health Association. Of the many public questions which are awaiting solution in Canada to-day, none are so important to my mind as that of the health of the people. It is a subject which affects everybody, and we owe it to ourselves and the rising generation to see that conditions are improved as lies within our power. This is a matter which rises above politics, and it is the duty of the whole nation to join in promoting the objects of this association." His Royal Highness then pointed out the urgent necessity of such an association as shown by the reports of epidemics of typhoid fever, diphtheria, and small-pox, and the great infant mortality. "It is an erroneous idea that deep knowledge is necessary. While much skill and knowledge is required for scientific research the results are comparatively simply of application, and in this connexion I wish to pay a hearty tribute to the professional men for their willingness at all times to give to the public the benefit of their valuable experience." His Royal Highness said that the object of the association was of great educative value, since nothing could be more useful than the spreading of knowledge which would conduce to the prevention of disease, so as to secure healthy bodies in which to cultivate sound minds. A further point was the teaching of the healthy upbringing of children, and their proper education in the rules of hygiene. This education of children His Royal Highness considered a most effective means of applying the work of the association. "In this way we shall avoid wasting time in combating the apathy of those older people who want to let well enough alone, and shall disseminate knowledge where it will do most good. Our idea is that what was good enough for the past generation is not good enough for the present, and to improve conditions we must teach the growing generation." His Royal Highness paid a warm tribute to the garden city project advocated by Mayor Guerin, and recommended most strongly as tending to do away with the evils which always follow in the wake of slums. He dealt especially with the efforts of sanitary experts to reduce infant mortality by improving the conditions under which the young are brought up, and expressed the pleasure with which he noted that such important matters as sewage disposal and pure drinking water were to be dealt with. These matters were so important that they were to be taken up by the federal and provincial legislatures, and their deliberations would be much aided by the association.

Another point dealt with by His Royal Highness was vaccination as a branch of preventive medicine. While he did not care to join in any controversy on this point, he significantly remarked that in the cemetery at Gloucester lay the bodies of 275 children, unvaccinated victims of a small-pox outbreak sixteen years ago, while during that epidemic only one vaccinated child lost his life.

"It is to be hoped that the people will avail themselves of the knowledge to be imparted by such a congress as this," concluded His Royal Highness, "because it is only when the people have fully grasped the meaning of any movement that legislative bodies can begin their work. Legislation without the intelligent support of the people is useless. It would be wise for us to remember that sanitary legislation is intended for the benefit of all, individually and collectively, and is not intended to make life irksome, but to protect us from disease, and as such we should give our full support to the authorities administering such laws."

Other Addresses.

The Premier (Mr. R. L. Borden), who followed, declared that he was strongly in sympathy with the work of the association, which was in the interests of the people. "I do not think that in the past the matter of public health," he continued, "has received all the consideration it should, and I trust that in the future Mr. Burrell will be able to give it a more direct attention than it has received in the past." There was a great loss every year through preventable disease, and Mr. Borden considered that this was a subject which should be dealt with in an effective way. "And speaking for those responsible for the administration of affairs in Canada," said the Premier, "I say that we promise to give this matter our most earnest consideration as far as it lies within the purview of the Dominion Government." This was taken to mean the formation of a new federal department of public health.

Mr. Martin Burrell, Minister of Agriculture, was the next speaker. He welcomed the formation of the association as calculated to establish a co-operation between laymen and physicians. Mr. Burrell deprecated that in so vast a contry as Canada there could be such problems as overcrowding and slums.

When Sir Lomer Gouin was called upon, he took the opportunity to address Their Royal Highnesses in French. He extended to the royal visitors a warm welcome to the Province, and also thanked them for their interest in the work of the association, which he considered capable of doing a splendid work. The Provincial Government was anxious to do everything possible to aid the work, and had already prepared plans for the division of the Province into ten districts, which were to be under the supervision of as many expert hygienists. These were to be chosen by competitive examination from the English and French universities.

Brief addresses were also given by Mayor Guerin, and Dr. Montizambert, Director-General of Public Health.

DISCUSSIONS AND PAPERS.

The various papers read at this Congress were such as to show that those officials in charge of the different departments of public health were alive to the importance of their subject, and realized the tremendous amount of work yet to be done ere the Dominion could be effectively guarded against the severe and oft-recurring epidemics which sweep through cities and towns.

Among the papers read at the morning session on December 13th was one on The Military Aspect of Sanitation, by Colonel Carleton Jones, Director-General, Medical Services, Ottawa. This paper was a surprise to many of those present. Among other things it was stated that hitherto the only practical sanitary lessons given to the Canadians were given at the annual camp meetings. The great triumph which military sanitation had reached was clearly seen in the Russo-Japanese war. Colonel

Jones then cited the immense improvements which had taken place in Cuba under a military Director of Public Health.

Medical Inspection and Care of Immigrants on Shipboard was the title of a paper read by Dr. J. D. Pagé of Quebec. Dr. Pagé dwelt on the importance of ship surgeons receiving training for this work, and deprecated the low salaries paid as not conducive to the best men filling the positions. It was of national importance that only the best men should hold these places and that some encouragement should be given to those of ability to retain their places.

Conservation of food by cold was ably dwelt upon by Dr. Bryce, Chief Medical Officer of the Department of the Interior. It was a thoughtful paper, carefully prepared, and showed the great field Canada had before her in this wide but hitherto little explored area. Conservation of food by cold is to the people of Canada of vast importance, and if, as Dr. Bryce pointed out, it is properly undertaken, will mean much to the Dominion. Milk, water, ventilation, and inspection of institutions were all fully discussed, and much needed reforms were clearly indicated.

Dr. J. G. Adami spoke on the value of child exhibitions, such as that for which Montreal is now preparing for the fall of next year, and showed how in cities where these had been organized there were immediate and striking results. Dresden has lately held one of these Child Welfare Exhibitions.

Dr. A. D. Blackader gave a very instructive paper on the more important cause of the high infantile mortality in large cities, and the influence exerted by milk dépôts.

Municipal milk supplies was the subject of an address by Dr. W. T. Shirreff, in which he pointed out that the producer, the distributor, and the consumer, were all equally concerned in providing pure milk. He advocated the testing of all cows with tuberculin, and that the federal authorities should compensate any dairyman whose cows were destroyed in the public interest.

In dealing with Municipal Food Inspection, Mr. P. B. Justin, chief food inspector of Winnipeg, said that meat inspection should be both *ante mortem* and *post mortem:* the ideal system of meat inspectors could not be attained until private slaughter-houses were abolished.

Medical officers of health, engineers, architects, laboratory workers, social workers, all read papers, and discussion on housing and town planning, and on the biological method of sewage disposal, were held.

Election of Officers.

The congress came to a close on December 15th, with the election of officers for the ensuing year. The following officers were elected: President, Dr. C. A. Hodgetts, Ottawa; General Secretary, Major Lord Drum, Ottawa; Treasurer, Mr. G. D. Porter, Toronto.

India.

[*FROM OUR SPECIAL CORRESPONDENT.*]

THE DELHI DURBAR HONOURS LIST.

THE medical services have not been illiberally treated in the Durbar Honours List, published on December 12th. The K.C.S.I. bestowed on Surgeon-General Lukis, Director-General of the Indian Medical Service, was generally expected and will be very popular in the service for which he has already done so much. The like high honour received by Surgeon-General Trevor, P.M.O. in India, will be equally appreciated by the R.A.M.C., who have also been honoured by the award of a C.S.I. to Lieutenant-Colonel Aldridge, recently of the Army Head Quarters Sanitary Department. Surgeon-General Bannerman, of Madras, formerly head of the Bombay Bacteriological Department, and Lieutenant-Colonel Harris, Inspector-General of Civil Hospitals, Bengal, also receive the C.S.I., and these awards will be popular among their many friends. Surgeon-General Branfoot, of the India Office, receives a tardy K.C.I.E. after a long and very distinguished career. The C.I.E. is awarded to the following India Medical Service officers: Lieutenant-Colonel Mactargart, Inspector-General of Jails; Lieutenant-Colonel Roberts, Residency Surgeon, Indore, who has organized a bacteriological laboratory and a hospital for Europeans; Lieutenant-Colonel Frenchman, of the retired list; Major Leonard Rogers, the Calcutta pathologist; Major Burden, Residency Surgeon, Nepaul; and Major Elves, of Madras. Lieutenant-Colonel Bedford, who recently retired from the chemical department, receives a knighthood, and Major Walter, of the Army *X*-ray Institute, and Major Tucker, of Coimbatore, receive the gold Kaiser-i-Hind medal. Altogether the list is a generous and well distributed one, and has given wide satisfaction in the medical services.

THE EFFECT OF THE RECENTLY ANNOUNCED ADMINISTRATIVE CHANGES.

The great administrative changes announced at the Delhi Durbar will have little effect on the medical services outside Bengal, but in that province it will be profound. The reunion of Eastern Bengal with Lower Bengal as a separate province, and the separation of the more healthy Behar and Chotta Nagpur and Orissa under a Lieutenant-Governor will result in all the desirable districts from the climatic point of view belonging to the latter province, leaving the new Bengal with only two or three desirable stations outside Calcutta. Presumably the Calcutta Medical College posts will be recruited from the new Behar Lieutenant-Governorship as well as from Bengal, in which case all attractions of the Bengal medical service will depart, and there would probably have been some difficulty in recruiting for the district appointments were it not that a good many Bengalis have recently entered the I.M.S. With the advent of the new Governorship the head of the Bengal Medical Department will presumably become a Surgeon-General, as in the Bombay and Madras Presidencies.

Scotland.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

THE INSURANCE ACT.

Manifesto of the Scottish Medical Corporations.

THE following is the final form of the manifesto to be issued to the members of the medical profession in Scotland in the course of this week by the three Scottish Medical Corporations. The covering letter, which is to accompany the manifesto, has not yet been adjusted, but will be in a day or two:

The National Insurance Bill has now become law.

The six cardinal points, again and again insisted upon by the profession as a minimum, have not all been incorparated in the Act.

The three Scottish Medical Corporations, namely, the Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, have previously expressed their views on the bill. Now that the bill has become law, the Scottish Corporations, who are cordially in sympathy with the profession, and are anxious to assist it in any way in their power, recognize that at this critical juncture *united action is essential.*

The Scottish Corporations are of opinion that since under the National Insurance Act Scotland is to have an Executive of her own, separate Commissioners, and a separate fund, it is essential that the medical profession in Scotland should have a strong and thoroughly representative Central Medical Council or Committee, endowed with full advisory and administrative powers, with a paid secretary and an office in Scotland. They have decided that in the first instance a General Council should be called together, consisting of (*a*) the Councils of the three Scottish Corporations, together with representatives of the four Scottish Universities; (*b*) the Scottish Committee of the British Medical Association; and (*c*) co-opted representatives from towns and counties, chosen by the local medical practitioners from the various districts all over Scotland.

The Councils of the three Corporations will recommend the bodies they severally represent to contribute liberally towards the expenses of such a scheme.

The Scottish Corporations are of opinion that the members of the medical profession in Scotland should refrain from undertaking any medical work under the Insurance Act until regulations have been framed by the Scottish Insurance Commission entirely in accordance with the six fundamental requirements of the profession.

The Scottish Corporations would most earnestly and seriously impress upon the profession the paramount importance of loyal co-operation and of determined and unflinching adherence to the six cardinal points, and the necessity for thorough and minute organization of the profession in Scotland.

East Lothian Practitioners.

At a large and representative meeting of the medical practitioners of East Lothian held in the County Buildings, Haddington, on Friday, December 29th, Dr. James Gordon, East Linton, presiding, after discussion on the National Insurance Act, the following resolution was unanimously agreed to:

> That this meeting of medical men practising in East Lothian herewith resolves itself into the "East Lothian Medical Association"; that the general purpose of the proposed association be an organized union of the medical practitioners of East Lothian for the purpose of protecting the interests of the professton and of strengthening the bonds of professional fellowship.

It was remitted to a committee of eight, one-third of the total number of practitioners in the county, to draw up a constitution to submit to a future meeting. It was further agreed to intimate without delay to the Scottish Commissioners that, unless the six cardinal points of the British Medical Association were fully embodied in the draft regulations to be drawn up by them for the working of the Act, no practitioner in East Lothian will go upon the panel.

Inverness-shire Practitioners.

At a largely-attended meeting of the medical practitioners of the town and county of Inverness, on Friday, December 29th, 1911, the following resolutions were unanimously adopted, and a copy was sent to the Scottish Commissioners, who are to carry out the provisions of the National Insurance Act:

1. That this meeting reaffirms the six cardinal principles of the British Medical Association.

2. That the Scottish Insurance Commissioners be informed that the profession in the town and county of Inverness will absolutely refuse to work under the Act unless the regulations framed by the Commissioners are consistent with the concession of the six cardinal principles above referred to.

Nearly every medical practitioner in the town and county of Inverness has signed the undertaking not to act on any panel until such time as the six cardinal points have been granted. Arrangements have been made for the formation of local Medical Committees to watch over the interests of the profession in the town and county of Inverness.

Sutherland Practitioners.

A meeting of the medical practitioners in the county of Sutherland was held on Friday, December 22nd, in the Sutherland Arms Hotel, Lairg, to consider the position of medical men in the Highlands of Scotland under the National Insurance Act. Representatives were present from all parts of the county. It was unanimously agreed to form a County Medical Committee, with Dr. MacLachlan, Provost of Dornoch, as convener, and Dr. Bremner (Golspie) as secretary. A motion that the committee should act in concert with the Scottish Medical Union was proposed by Dr. Simpson (Golspie), and seconded by Dr. Jameson (Scourie), and carried unanimously. The secretary was instructed to communicate with representatives of the medical profession in the Highland counties with a view to effective co-operation.

FEES OF MEDICAL LECTURERS ON HYGIENE.

At a recent meeting of the School Board of Glasgow Dr. Grant Andrew entered a protest against the fees paid by it to medical lecturers on hygiene. He said that he desired to enter his dissent to the rate of remuneration of 7s. 6d. for a lecture of three-quarters of an hour's duration fixed by the Domestic Science Committee for lectures on hygiene. Candidates to deliver these lectures had been advertised for, and three lady doctors were appointed. One member asked, amid some laughter, what was "the trade union rate for these lectures." Dr. Andrew stated that the fee was a guinea, but added that he did not wish to discuss the matter, but merely to dissent from the rate fixed.

Ireland.

[FROM OUR SPECIAL CORRESPONDENTS.]

MEDICAL INSPECTION OF SCHOOL CHILDREN.

MR. J. B. STORY, F.R.C.S.I., in the course of a paper on the medical inspection of schools and school children, read at a meeting of the Statistical and Social Inquiry Society, said that the first year's expenditure would be about £12,500, and after three years it would be approximately £23,000. A rate of three-eighths of a penny in the pound on the valuation of the country would produce over £24,000. He suggested that the cost should be defrayed by a local education rate rather than by a subsidy from the Imperial Parliament, as this would make the local authority take a pride in its schools, which it has no inducement to take at present.

DUBLIN HOSPITALS AND THE INSURANCE ACT.

Arrangements are being made to hold another conference of delegates of the various Dublin hospitals early in January to consider what further steps should be taken in connexion with the working of the National Insurance Act. A meeting was held last July at which a series of five resolutions were drawn up, copies of which were sent to the Chancellor of the Exchequer and the Irish members of Parliament. These were published in the SUPPLEMENT, August 12th, 1911, p. 300.

ANTIVACCINATION CRUSADE.

At a recent meeting of the North Dublin Guardians the following resolution was carried:

> That, in the opinion of this board, the practice of vaccination is uncleanly, revolting, and a danger to public health. And that in future it shall be a direction to the officers of this union that no prosecutions shall be instituted against persons who refuse to submit themselves, or their children, to this dangerous practice. And this board desires to place on record its opinion that small-pox, and other diseases, can be eliminated by the provision of proper housing and sanitary accommodation. That a copy of this resolution be forwarded to the South Dublin Board of Guardians.

The mover said that he had studied reports from unions in England, and found that where a lesser number of children were vaccinated, there was a lower death-rate. In the whole town of Leicester not 10 per cent. of the children were vaccinated, and the death-rate of that town was, he maintained, the lowest in the United Kingdom at the present time.

MANAGEMENT OF A CARLOW HOSPITAL.

The Carlow Board of Guardians has received a letter from the Local Government Board enclosing the report of its inspector, Dr. Joseph Smyth, upon the sworn inquiry recently held in reference to the charges made by the head nurse of Bagnalstown Hospital against the late assistant nurse and also with reference to the general management of the hospital. In his report the inspector stated that the use of soda water for ordinary drinking by the inmates should be discontinued and plain pure water obtained. With regard to the nursing arrangements in the hospital, the Board pointed out that as the head nurse was responsible, in the absence of the medical officer, for the administration of the hospital, the general supervision and control of the assistant nurse, wardmaids, and attendants, and for the proper order and discipline of the sick wards under her charge, she could not be expected to fulfil her obligations if she were required to perform night duty. With regard to the friction which apparently existed between the medical officer and the head nurse, the Board deferred action in the hope that both these officers, realizing that their personal feelings could not be allowed to interfere with their public duty, would compose their differences and work for the future in official harmony. It was decided to hold a special meeting to consider the report.

IRISH BRANCH OF THE BRITISH DENTAL ASSOCIATION.

The annual dinner of the Irish Branch of the British Dental Association was held on Saturday evening, December 16th, at the Shelbourne Hotel, Dublin. The Lord Lieutenant was present, and spoke of the importance of dental treatment in connexion with the children

attending schools. The way to obtain this, he said, was by creating and fostering a public opinion in its favour, and they should be thankful that they had such a body as the British Dental Association to create this public opinion.

Free Dental Dispensary.

At the last weekly meeting of the South Dublin Board of Guardians, a letter was read from the Rathgar and Terenure Branch of the Women's National Health Association, saying that it had arranged to supply the poor of the district with the services of a qualified dentist free, and requesting permission of the guardians to use the room attached to the Terenure Dispensary twice monthly for the dentist's attendance. This permission was granted.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

LIVERPOOL.

The University.

The past year at the university has not been in any particular direction eventful, but there has been steady progress all round. At the annual meeting of the court in November last a new statute regulating matriculation examinations was adopted, and an additional ordinance constituted a new board for university extension, providing certificates in architectural design and granting diplomas in ophthalmic surgery. This is the first year which the university has closed with a debit balance (£1,175). The extension of the university buildings for the accommodation of the arts faculty required £32,000, and an appeal has been made for the necessary £8,000 to complete this sum. Other events which have occurred in the university during the past year have already been recorded.

The Old Students' Association held its annual ball in the Exchange Hotel on December 27th, 1911. Miss G. E. Scrimiger, the president, received the company, along with Dr. C. W. Hayward, the treasurer. The ball proved a great success.

Sir Alfred Jones Memorial Hospital.

At a recent meeting of the residents of Garston and Aigburth, held in the Co-operative Hall, in connexion with the proposed new accident and emergency Hospital for Garston, the offer of £7,500 which the Liverpool Corporation made to free them from their present obligation to maintain an accident hospital at Garston was considered. Dr. Grimes presided, and amongst those present were Drs. J. J. O'Hagan, R. Humphreys, Blair-Bell, and Paterson. The present hospital dates back thirty-two years, and is considered to be quite inadequate for the needs of the district. Dr. Paterson read the report of the executive committee, which recommended the ratepayers of the district to accept the City Council's offer; it pointed out that there was in hand £10,000 from the estate of the late Sir Alfred Jones, and £8,000 from the estate of the late Mr. James Wilson of Cressington, whilst the promised donations amounted to £2,000, which, with the offer of £7,500 by the City Council, made a total of £24,500, but a considerable proportion of this had to be set apart for maintenance. The committee had considered various sites, and that recommended was central, stood high, and offered good frontages. The vendors had offered in the event of purchase to contribute 10 per cent. of the purchase money as a donation to the new hospital. After much discussion the report was adopted, and it was further resolved that the new hospital should be called the Sir Alfred Jones Memorial Hospital.

Medical Charities and the Christmas Season.

In association with the medical charities of the city and districts the Christmas season has brought pleasure and gladness to the hearts of those who through sickness or accident were perforce inmates of the various hospitals. The patronage and willing help of the Earl and Countess of Derby (Lord Mayor and Lady Mayoress) was evident in many delightful ways. At the Royal Infirmary Lord and Lady Derby furnished the Christmas tree, which was brought from Knowsley Park. It was loaded to breaking strain with beautiful and well-selected presents for the patients. Lady Derby herself inaugurated the ceremony of distribution, after which Lord and Lady Derby made a tour of inspection of the infirmary. At the Children's Infirmary the annual Christmas party was a great success, and the beautifully decorated tree was a great source of delight to the little patients, all of whom received presents of toys, etc. Space will not allow of notices of festivities at all the charitable institutions.

SOUTH WALES AND MONMOUTHSHIRE.

King Edward VII Hospital, Cardiff.

Great efforts have been made by the Lord Mayor (Alderman Courtis) to raise the £3,500 required by Christmas to meet the anonymous challenger. His Lordship and the Lady Mayoress have already subscribed £500 to the fund, and they have now most generously contributed a further £500. Among other recent donations is £100 from the Tredegar Iron and Coal Co. The Lord Mayor in his final appeal expresses the hope that other coal owners will follow their example.

Swansea Hospital.

At a board meeting of the Swansea Hospital it was stated that the building account debt had been further increased by nearly £1,000 during November. The report of the Subcommittee on the Insurance Act was passed, that committee having framed a resolution that the Act was incomplete unless provision was made in it for hospitals supported by voluntary contributions.

Colliery Workmen and the Insurance Act.

Mr. W. Brace, M.P. for South Glamorgan, in a speech at Bargoed on December 29th, 1911, said that if the doctors went "on strike" he would not complain of their action, but the workmen, who were the doctors' employers, might lock them out. He saw nothing impracticable in the workers and doctors coming to an amicable settlement and devising a scheme suitable to both sides; but in his opinion the poundage system would have to be abolished, and the money received in bulk at the collieries would have to be administered by some authority. Such an authority would, he hoped, be formed by the workmen themselves to administer their own funds. Mr. Brace's remarks about professions going on strike were received with laughter, but Mr. Brace and his audience do not apparently appreciate the fact that only persons already employed can strike. A man who says that the terms offered by an employer are not good enough to make him apply for work is not a striker.

Special Correspondence.

BERLIN.

Action of some Members of the Sulphur Group (Selenium and Tellurium) on Mouse Cancer.

The Berliner Medicinische Gesellschaft had one of its great nights on December 20th, when Wassermann spoke on "chemotherapeutic experiments on animals suffering from tumours," undertaken by him in conjunction with Keisser and v. Hansemann. The last named gave an account of his *post-mortem* examination of these animals. The great hall of the Langenbeck House was filled to the last place.

It appears that a year ago Wassermann, when engaged in studying the question whether cancer cells live longer in the blood serum of a cancerous individual than in the serum of a healthy person, treated freshly excised cancerous tumours with sodium tellurate and selenate, salts which give a black or red precipitate in the presence of living cells. He found that the precipitates were formed inside the cells. His next step was to examine whether the same chemical affinity between carcinoma cells and tellurium or selenium existed in the living cancerous individual. This experiment could, of course, not be made on human subjects, and the research was from this point carried on exclusively on cancerous mice. Wassermann laid special stress on this in his speech, as did

v. Hansemann afterwards, and both dwelt on the fact that mouse cancer differed very considerably from human cancer, and that the experiments and their results referred exclusively to mice, and his account of them must not be understood as having any bearing on the possible cure of human carcinoma. Wassermann's next step was to inject the saline solutions into the tumours; the result was that the tumours were softened, liquefied, and that in some cases they healed. Intravenous injections, which were then tried, gave a negative result.

Wassermann then, with his assistants, set about finding a non-toxic selenium combination which might be selected and absorbed by the cancer cells. Eventually a combination of eosine and selenium was found which possessed this property. The results were as follows:

"After three injections into the caudal vein of 2.5 mg. each on three consecutive days, the tumour becomes softer; after the fourth some liquid can be felt, and the tumour shrinks; after the fifth and sixth injection the tumour feels like an empty bag, and in about ten days every trace of it has disappeared. There were many fatal cases. If the tumour were large and the softening process rapid, the liquefied contents of the tumour entered the blood vessels and acted as a poison. When this was not the case, and if the tumour completely disappeared, no new tumour formed even after an interval of many months.

Von Hansemann, who spoke on Wassermann's experiments from the anatomical point of view, said that the injections act destructively on the nuclei of the tumour cells. He was able to follow up and demonstrate what became of the disintegrated mass of the tumours. The blood carried them to the spleen, and occasionally, but in small quantities only, into the liver. In the spleen they were gradually destroyed, unless they were carried in in such quantities and in such a rush that they could not be overcome; in that case death ensued. No other anatomical changes were found, and in no single case was a normal body cell in any way attacked by the new remedy.

Before the meeting dispersed, the Director of the Royal Cancer Institute stated that for the last year or more Klemperer, in conjunction with Emil Fischer (the distinguished chemist of the Berlin University), had been engaged on very similar experiments. They treated cancerous mice with injections of vanadium and selenium.

PARIS.

Prophylactic Inoculation in Typhoid Fever.—Fees for Attendance after Operation.—The Anatomy Riots.

DR. VINCENT has communicated to the Académie de Médecine the results of the prophylactic inoculation for typhoid fever of soldiers in Morocco. Wright's vaccine was employed, and also a polyvalent vaccine, which contained several different species of bacilli obtained in Morocco, and some paratyphoid organisms. Dr. Vincent vaccinated 283 soldiers, and in none did any unusually severe sequelae occur. Some slight fever and local pain was experienced by several patients, but only after the first injection. The method adopted was to give four injections of Wright's vaccine and five injections of polyvalent vaccine at intervals of seven or eight days. The soldiers were extremely liable to become infected with typhoid fever, both on account of the extreme heat which lowered their vitality considerably, and also on account of the general insanitary conditions. No soldiers were vaccinated who had previously had enteric, or even febrile gastric attacks. Of 2,632 men who were not vaccinated, 171 were laid up with enteric, and 134 had attacks of gastric disturbances accompanied by fever; this represented 11.5 per cent. of attacks in unvaccinated soldiers. Only one case of enteric occurred among the 129 soldiers treated with Wright's vaccine. The 154 men who were inoculated with the polyvalent vaccine were absolutely immune, and no case of enteric fever or gastric disturbance occurred amongst them. It would be interesting to know whether people immunized by vaccine may still be "typhoid carriers," as the presence of the typhoid bacillus is undoubted in such cases, but whether it is immediately eliminated or whether its toxic action alone is inhibited has not yet been worked out.

An interesting case was recently decided in the Paris courts. A practitioner who was called in to see a patient advised operative interference, and a surgeon called in consultation decided to operate, and the practitioner was present at the operation. During the patient's convalescence the practitioner paid several visits, and after due time sent in his bill for attendance during the operation and for his following visits. The fee asked was £4 for attendance at the operation and 16s. for each visit. The father of the patient said that the doctor had not been asked to pay these visits and was not entitled to the fees. The ruling of the court was as follows: (1) That the fee of £4 was excessive for mere attendance at the operation as the doctor did nothing but look on, and, in the opinion of the court, £2 was sufficient remuneration. (2) That the doctor had no right to pay the subsequent visits to the patient while in the nursing home, as the patient was under the surgeon's care, and that unless specially called for the physician should not have attended.

During the past few weeks some rather unusual scenes have taken place at the university here. Each afternoon at the École de Médecine crowds of students collect and indulge in a passionate demonstration of hostility towards the Professor of Anatomy. Discontent has been brewing for several years on account of the manner in which the anatomy classes are conducted, and the upshot on this occasion has been serious rioting. At every gate of the university detachments of soldiers and police were stationed to maintain order, and even took up their stand in the classroom during the lecture, so that the professor spoke and demonstrated to soldiers and police, while the students stood in crowds outside in the quadrangle shouting and singing songs. They refused to attend the lectures until they got satisfaction from the University Court, and several of the ringleaders were arrested. The "strike" is looked upon as a huge joke by all the undergraduates, and although they have good reason for complaint, their method of showing disapproval is rather crude. The other day one "back bencher" threw a bag of flour at the professor, who was covered with white from head to foot. The University Court, before whom the arrested students were brought, acquitted one student, suspended two for three months, and one for six months. The court then notified that the university would be closed to students of the first and second year until January 5th, 1912, and that if after that date any new disturbance arose, the medical department would be closed till the end of the first term, and no fees would be returned for classes missed.

Correspondence.

SIR JAMES BARR AND THE INSURANCE ACT.

SIR,—Sir James Barr's letter is merely a reiteration of his own personal opinions, and it fails lamentably to carry conviction to its readers, because there are no cogent reasons stated for most of these opinions. To deal with his points seriatim:

He begins by applying his favourite word "fraud" to the bill, but does not justify the epithet then nor even later.

1. Do not inherited riches tend to destroy individual effort? Are not the upper classes a "spoon-fed" race who look to paternal inheritance to feed and clothe them, so that they need not work any hours a day? Are they thus encouraged to multiply their breed? Is it not a natural fact that hardships and adversity stimulate the birth-rate? If the whip of hunger and possible suffering is needed to produce the best individuals, why should not all be subjected to it?

2. The expense, with the amount of sickness, will be ever diminishing, because extension of contract practice will act as a most powerful stimulus to the medical profession to study the raising of healthy individuals, and to instruct insurees in this matter, as well as in the maintenance of good health. It would not pay most doctors to do this now! How dare Sir James Barr insinuate that his practising *confrères* will permit the enormous amount of malingering which his eye foresees under the bill? He says a crop of unscrupulous lawyers will spring up! Does he consider the crop of unscrupulous doctors is already here?

3. What financial experience is referred to here? Is it the diminution in the National Debt? An incentive to save the funds of his friendly society rarely exists in the

individual club member, at any rate at his own expense; and anyhow, if he be fit to work, the doctor will not sign him "on his club"—but Sir James Barr thinks that he will.

4. The lower the fee provided for the doctor, the more urgent will be the stimulus to the study of methods of health maintenance and illness prevention, and this will inevitably result in an improvement of the national health—a directly opposite effect to the one Sir James Barr imagines will occur. The Act is designed for "the prevention of sickness."

5. How much would Sir James Barr suggest spending on sanatoriums? Would he make the bill even more expensive? And he complains of the expense in his Sixth Clause! And then in Clause 8 he objects to treating consumption at all; he wants to let the poor devils die! In 5 he wants institutional treatment, and in 6 he says the wage earner is best able to take care of himself. Then where is the need for altruism and voluntary hospitals? If institutional treatment *is* needed (and of course it is, imperatively) it must eventually be provided under the insurance scheme, and it can be done by demanding from *all* the rich what a few now give willingly.

6. We are to degenerate because we propose a scheme to diminish sickness and alleviate suffering! And yet Germany, that paradise of Sir James Barr's political party, has such a scheme.

7. What an absurd opening sentence here! And what a misstatement, with no attempt at justification, the last sentence of this clause is! How about the lodging-house girls in the large cities and towns, with gastric ulcer, with consumption, with varicose ulcer? Will the general hospitals take these last two cases in?

8. Bring up the infants and children healthily, and you will have a healthy race; the flat chest can be profoundly altered by physical culture. Attend to the children's teeth above all—as Dr. Hildesheim so eloquently advocates in last week's Journal. By all means let us practise eugenics; it is urgently needed. But here, again, you will interfere with the wage earner's liberty (vide *his* 6).

The greatest danger of the present day to the doctor's income is the trend of modern legislation in tackling public health matters—sanatoriums, tuberculosis dispensaries, infectious hospitals, inspection of school children, school clinics, and so on. Then, again, we have the old trouble of hospital abuse. And, further, we have health societies, such as the Food Reform Association. How we should welcome all these old enemies as allies if we decided to work under the bill for a proper capitation fee; with their help and our own efforts we should soon be possessed of sinecures.—I am, etc.,

Montague Dixon, M.D., B.Sc.,
Melton Mowbray, Jan. 1st. M.R.C.S., L.R.C.P.

Sir,—There is no scientific truth better established than that in every race of living beings two classes may be found—the fitter, high up on the crest of the wave of evolution, destined to evolve, to survive, and to progress; and the less fit, by-products cast off in this upward march, incompatible with their surroundings, and doomed to extinction. Putting aside for the moment the various social grades which time and circumstances have brought into being—the submerged tenth, the working or artisan class, the great middle class, the aristocratic class—we find in civilized mankind at the present day two essential natural divisions—upper and intelligent, lower and non-intelligent. The relation the one bears to the other is highly important, and to comprehend it clearly at least one fallacy must first be swept aside—the belief that the lower of these is the recruiting ground of the higher. The exact opposite is really the case, for as fast as Nature eliminates the lowest of the lower class, so fast is their place taken by the members of the stratum just above, and these again replaced by the less well endowed of the class still higher. From the topmost stratum of this higher class, from the aristocrats of intellect, speaking broadly, does evolution proceed, and though there are exceptions which the purpose of this communication does not permit me to investigate, from this class only is intellectual eminence born. This is not the same, be it noted, as "aristocracy by birth" so called, though, as abundantly proved by every shred of genetic investigation, it is an aristocracy by birth in the most rigid interpretation of that term.

To every one who endeavours to take stock of the intellectual resources of our nation on this first day of a new year it will be at once apparent that the aim and trend of all recent legislation has been to hamper the class on whose freedom and existence national progress and pre-eminence depend, and to foster and even delegate power to that other class which asserts by its very place in the social scale not only its utter inability to cope with the struggle for existence without the aid of the other, but actually its menace to any progress at all. In other words, its elimination is the price of national progress. Unless we pay that price we cannot progress.

But a further point is also apparent. One class we see organized, directed, and led; the other disorganized, disunited, and utterly devoid of guidance and leadership. To crown all, we see ourselves faced with the prospect of manhood franchise, swamping for ever the already small voice of the party of progress, and revealing for the future nothing but a vision of the race rushing headlong after its herd of swine down the steep place that leads to destruction.

With such, as a citizen, every medical man is concerned; to labour the point is superfluous. In addition, however, we see beside the national disaster the nearer and more immediate professional one. What does the National Insurance Act actually mean? It means that our old legitimate pride, our traditional right to do our own work in our own way at our own price is to be snatched from us. As men of science we cease to exist; as civil servants, slaves of the voluble upstarts whom we now call statesmen; slaves of that hydra-headed tyrant the soon-to-be-enfranchised mob, reaping not even the reward of the self-vaunting pill-maker, ignoring the science our loss of leisure has rendered barren, we find ourselves at last in darkness and degradation to which the Middle Ages are models of inspiration and light.

Can we not avert it? Can we not even now accept true leadership? Let us take our stand on the words of Sir James Barr, and let us say with him: "Stand from under this Act, and let it and its author crash together." And let us not only say it—let us do it, fearlessly and independently. Let us hail Sir James Barr as our leader; it is still in our power to avert our destruction, and, by working out our professional salvation, to stem, in some measure, the tide of neurotic and debasing legislation which, unstemmed, will carry our race to its certain doom.—I am, etc.,

Wood Green, N., Jan. 1st. A. Rugg Gunn.

Sir,—It seems to me a most unfortunate circumstance for the profession that at this somewhat unique crisis in its history it should have as President-elect of the British Medical Association, and evidently as titular leader of the forces opposed to the Insurance Act, a violent political partisan such as Sir James Barr.

The whole of the opinions expressed in his letter in the Journal of December 30th, 1911, are certainly, to the great majority of your readers, discounted by its last sentence of somewhat cheap clap-trap taken from the *Standard* against Mr. Lloyd George. There can be no two opinions as to whether this sort of thing can do good or harm. It can only do an infinite amount of harm to the cause it is supposed to serve. This agitation is in danger of becoming suspect; it is felt by many that the fight against the Act in certain quarters is being exploited with mixed motives.

We are all more or less partisans. Personally, I love to meet a man who is a valiant fighter for the faith that is in him; but a pronounced partisan of extreme views and a valiant political fighter is surely a person profoundly unsuited to act as foreman of a jury sitting in judgement on such an issue as that now facing the medical profession.—I am, etc.,

Wrexham, Jan. 2nd. John T. Hislop.

ARTIFICIAL RESPIRATION IN THE APPARENTLY DROWNED.

Sir,—As a member of the committee which supported the adoption of the Schäfer method by the London police, I joined in that recommendation. Last autumn, unfortunately, I was called on to perform artificial respiration on a man and a boy who lost their lives in a boating accident. The man was found floating with

his head under water, and was brought to shore about ten minutes after the boat was overturned. He was cyanosed and pulseless. I carried out the Schäfer method, and continued it with the help of a coastguard. Hot-water bottles and blankets were quickly fetched, and the limbs of the man rubbed by willing helpers. The Schäfer method produced great venous congestion of the face and neck, due no doubt to the expression of the blood out of the abdominal organs, the liver in particular. On changing, after some period of useless effort, to the Sylvester method I found the congestion rapidly disappeared. On going back to the Schäfer method the congestion at once reappeared. The same happened again on repeating the change. I came to the conclusion from this very striking experience that the best thing to do in a similar case would be to change frequently from the Schäfer method to the Sylvester and back again. This procedure evidently must keep up an artificial circulation of the blood through the head. I would urge others to follow this course and not stick to the one method only.

In the case of the boy, aged 9, I used the mouth-to-mouth method of inflation, placing a handkerchief over the boy's mouth, and pressing a hand over his stomach to prevent inflation of that organ. I found this method very easy and effectual, and a lady after watching me carried on the method very well, while I was called away to attend another rescued child. The boy had been found after some delay under the sail of the overturned boat, and could not be resuscitated.

The mouth-to-mouth method is far the most effectual method for children, and on another occasion I should try it on an adult, and alternate this with the other methods. From my practical experience I am convinced it is not the best thing to stick to any one, but to frequently change the method. I am speaking, of course, of help given by a trained man.—I am, etc.,

LEONARD HILL.

Loughton, Dec. 26th, 1911. London Hospital Medical Co lege.

DISEASES OF THE PANCREAS.

SIR,—In your review of Professor Albu's monograph on the diagnosis of pancreatic diseases, published in the JOURNAL of December 30th, 1911, p. 1698, you say that "when a drop of a solution of adrenalin is instilled into the eye the pupil dilates under normal circumstances, but in diabetes and Graves's disease this fails to occur." May I point out that the first part of this statement is contrary to the fact, and that the second part is only to a certain extent true? Loewi (Vienna Medical Society, July 14th, 1907), who first made observations on the effect of adrenalin on the pupil in its relation to diseases of the pancreas, found that small doses do not act upon the normal eye, but that after removal of the pancreas its instillation causes speedy and pronounced mydriasis, so that this effect can be used as a means for diagnosing pancreatic insufficiency. In 18 cases of diabetes Loewi obtained a positive result with 10 (55 per cent.), but with patients suffering from a variety of non-pancreatic affections mydriasis was only observed in 2 out of 30. Similar results were obtained by Quadrio (*Il Policlinico*, xv, July 26th, p. 933) and others. I have not had the opportunity of reading Professor Albu's book as yet, so I cannot say whether the mistake is his or your reviewer's, but, at any rate, it is likely to mislead your readers.

Further on in the same review it is stated that my suggestion that the crystals obtained in the "pancreatic" reaction "are a pentosazone is impossible, as pentose urine does not give the reaction." Such a dogmatic statement must, I think, be due either to a disregard of the facts or to a failure to appreciate them correctly, possibly owing to the difficulties of struggling with a foreign language. Normal urines to which a pentose, such as xylose or arabinose, has been added yield an osazone resembling in many respects that found in some urines giving a positive "pancreatic" reaction, as I showed in a paper read to the Royal Society in 1909.—I am, etc.,

London, W., Dec. 30th, 1911. P. J. CAMMIDGE.

SWEETS IN CHILDHOOD.

SIR,—There will always, no doubt, be found some who question whether sweets can have any deleterious effect on the teeth notwithstanding any evidence which has been, or may be, brought forward. Mr. Hopewell-Smith and Dr. O. Hildesheim may continue to believe that "Our knowledge of the etiology of dental caries is based on misapprehension, developed on lack of research, and crowned by ignorance," but I am sure the great majority of the members of the dental profession who have studied the question would vigorously contend that our knowledge of the etiology of dental caries is based on the illustrious scientific work of the late Dr. W. D. Miller, developed on "the knowledge that has been laboriously accumulated by the dental profession during the last twenty years" and crowned by the success of a method of prevention based thereon, which has recently been described as "eminently practicable and almost wonderful, nay, miraculous to the uninitiated, in its results."—I am, etc.,

London, W., Dec. 30th, 1911. J. SIM WALLACE.

SIR,—The answer to many of Dr. Hildesheim's problems is already to hand. The incidence of dental caries coincides, both in man and beast, with the use and stagnation among the teeth of "soft, sticky, starchy, and sugary food." The late Mr. Mummery's investigations proved this. At one end of the scale were exclusively meat eaters (Gauchos of the Argentine Plains) free from caries; intermediate were races using coarsely ground cereal foods (Hill tribes of Northern India); and at the other end civilized peoples using soft, sticky, farinaceous foods.

The problems enunciated may be answered in this way:

1. *The especial incidence in childhood.* Dental caries is a disease of early life among civilized peoples, since from the moment of eruption teeth are exposed to conditions favourable to decay.

2. *The greater incidence in females after puberty.* Not so in my experience.

3. *The different incidence in different social classes.* Avoidance of dental caries depends on personal cleanliness.

4. *The incidence among different races, and the relation, if any, to their dietaries.* Incidence of dental caries varies directly with the stagnation of soft, sticky, starchy, and sugary food.

5. *The incidence in wild and domesticated animals.* Depends on the same factor. The horse is a case in point: the wild horse is free from caries; the domesticated horse, fed on crushed oats, suffers from caries. (Mr. J. F. Colyer has published information on this point.)

6. *The degree of vulnerability of various teeth and of various surfaces.* Runs exactly parallel to their chances of stagnation. Well illustrated by the popular idea that the wisdom teeth come through decayed.

7. *The bacteria that are causally related to caries.* Needs more investigation.

8. *The nature and function of Nasmyth's membrane.* Whatever be its nature or function, it fails to protect against caries.

9. *The difference between white caries and brown.* White is rapid, and found in young teeth; brown is slow, giving time for the causative or other germs to develop chromogenic functions.

10. *The determining factors in the alkalinity and acidity of saliva.* Needs more investigation, but either weak alkalinity or weak acidity (and the salivary reaction is always weak) is favourable to cleansing and incapable of harming the teeth.

As concerns the starting-point of this correspondence, "sweets in childhood," I personally am convinced of the evil effects of stagnant sugar on the teeth, and I should like to get historical data as to the period when the use of sugar became general, and data of the incidence of caries before, during, and after that period, to test my conviction. Unfortunately, dated skulls are hard to come by—can any of your readers tell of any?

By the way, may I ask those who talk of the child's physiological craving for sugar what happened to the children during the long ages before sugar became a cheap household commodity? Did they die for want of sugar, or was the craving satisfied by the modicum present in what vegetable food they could get? Or have we come on a new fact in evolution—that children rapidly evolve a liking for what is nice?—I am, etc.,

London, W., Jan. 1st. J. G. TURNER.

PARASITISM.

SIR,—In the BRITISH MEDICAL JOURNAL of December 23rd, 1911, p. 1679, Mr. Wheldon points out that my definition of a parasite does not allow of differentiation between symbiosis and parasitism, but this is rather

difficult to decide, because, judging from well-known examples of symbiosis, and from that literature on the subject which I have been able to examine, the meaning of the word "symbiosis" is nearly as vague as that of "parasitism." One authority states that symbiosis means merely that two creatures live together; a second says that one of the two creatures cannot live without the other; a third, that they must be living together for mutual benefit; and, fourthly, that they do not inhabit each other, but that one feeds on some cast-off product of the other. For instance, *Bacillus coli* is usually said to be a parasite, and yet it is of benefit to its host; whereas *Entamoeba coli*, which will not live in artificial culture without the presence of certain bacteria, is said to be living in symbiotic relationship to the bacteria. There seems to be little difference. I do not wish to presume, but I should like to suggest that the time has come for both terms to be accurately defined. It appears to me that, if my definition of a parasite is sound, symbiosis should be considered to be a form of parasitism—a subdivision of it, the difference being that a symbiotic parasite is one which does not feed on the vital structures of its host, but which essentially derives benefit from some substance produced (cast off or set free) by the metabolism of the latter. Some such definition will, I think, prevent the number of various meanings being multiplied, which seems to be likely under the present conditions.—I am, etc.,

London, W., Dec. 28th, 1911. H. C. Ross.

THE BLOOD IN CEREBRO-SPINAL MENINGITIS.

SIR,—At a time when so much careful work is being devoted to cerebro-spinal meningitis and poliomyelitis, may I venture to suggest that attention be directed to the blood?

In November, 1900, and January 15th, 1901, we published reports, in the *Journal of Tropical Medicine*, describing an outbreak of cerebro-spinal fever at Cape Coast.

Briefly, there were over 80 cases, and in every one of these we found a diplococcus in the blood in quite early stages of the disease, while thirty controls showed no diplococci. In addition, there was a marked early polynuclear leucocytosis, and the two together were sufficient to enable cases to be diagnosed in quite early stages. At that date our observations roused much opposition, but they have, in the main, been since confirmed by various observers. In particular, in the account in Osler and McCrae's *System of Medicine*, stress is laid on the importance of recognizing the existence of quite slight cases. Several such cases we recognized early by examination of the blood.—I am, etc.,

MARY HAMILTON WILLIAMS, M.B.,
Colwall, Dec. 31st, 1911. B.S.Lond., D.P.H.Camb.

Public Health AND POOR LAW MEDICAL SERVICES.

INCREASE OF WORK WITH STATIONARY SALARY.

District Medical Officer's Increase of Salary.

A. C. is a medical officer with a district six miles across and an area of 6,825 acres; his salary of £28 a year was fixed many years ago when the population (now 14,000) was only about half that. He asks: What would be a reasonable amount of increase to apply for, he being now expected to attend 150 old age pensioners when required so to do, in addition to all his former duties?

*** Our correspondent has undoubtedly a strong claim for an addition to his present salary, first, on the ground of the great increase of population, and, secondly, because he will in future become responsible for the medical care of all the old age pensioners in his district. It is, however, impossible for us to say what this increase should be. If the population has doubled and if its character has not altered, and if the original payment was reasonable in the original conditions, then to ask for it to be doubled might be proper, but we venture to suggest that before making any formal application for a change of salary he should be in a position to state to what extent the old age pensioners' claims on him have added to his professional labours.

The Services.

GLASGOW UNITS, R.A.M.C.(T.)

DURING his visit to Glasgow next week Lord Haldane will lay the foundation stone, on January 8th, of the buildings at Yorkhill which are to house the Glasgow units of the Royal Army Medical Corps, Territorial Force. These buildings will be the most handsome and extensive of their kind in Scotland. The site extends to 2½ acres, and the estimated cost of the buildings is £28,000. There will be accommodation for the Glasgow Yeomanry, a fully equipped riding school for the use of mounted units, and accommodation for the five medical units, the Lowland Mounted Brigade Field Ambulance, 1st and 2nd Lowland Field Ambulances, and 3rd and 4th Scottish General Hospitals. These medical units comprise 32 officers and 730 men, and the western portion of the buildings will be allotted to them. This will have a drill hall 132 ft. by 70 ft., and orderly rooms for each unit. The other accommodation will include officers' rooms, sergeants' rooms, rank and file rooms, board room, lecture hall, nursing ward, hospital kitchen, and other "training rooms." In the courtyard there will be wagon sheds for the technical vehicles of the field ambulances, with harness rooms and stores for the equipment. The riding school will be in the eastern portion of the buildings, and will have an arena 150 ft. long by 106 ft. wide, with stabling for forty horses. Harness, saddlery, and forage rooms will also be provided, and rooms for dressing for officers and men. The transport sections of the field ambulances will, on the completion of the buildings, have opportunities for a practical training which they have not had in Glasgow since the institution of the Territorial Force.

THIRD HIGHLAND FIELD AMBULANCE.

LIEUTENANT-COLONEL W. KINNEAR, commanding 3rd Highland Field Ambulance, Dundee, has been granted an extension of his period of command for two years.

Medico-Legal.

CONVICTION OF AN UNREGISTERED PRACTITIONER.

AT the Central Criminal Court on December 19th, 1911, Charles Louis Lumley, said to be aged 61, and described as a physician, was indicted for wilful murder, it being alleged that he had performed an illegal operation upon a woman and that she had died from the effects. In the event, the prisoner was pronounced not guilty of murder, but guilty of manslaughter, and received a sentence of seven years' penal servitude.

According to the evidence, as reported in the *Times*, the prisoner, who was practising medicine in Great Titchfield Street, W., was visited last September by a man and a woman, and having examined the latter stated that she had either appendicitis or peritonitis, and that the best thing she could do would be to go into a nursing home and have performed an operation which would cost fifteen guineas. In consequence she went to a house in Maida Vale, where she was kept in bed and attended by the prisoner, who later called a medical man into consultation. The latter found signs of septic poisoning and the patient eventually died. For the defence it was submitted that the miscarriage from which the woman died was innocent and natural in its occurrence. In the course of the case it was alleged by the police that the prisoner when arrested at the coroner's court on the termination of the first inquiry attempted to commit suicide by taking a drug, and that on being placed in a cell after arrest he gave vent to statements which could hardly be reconciled with the defence subsequently put forward. It was also stated by the police before sentence was delivered that ever since January, 1895, the prisoner had been suspected by them of performing illegal operations on women, and that in October, 1896, a female patient of the prisoner's was the subject of an inquest which resulted in death being shown to have been due to the performance of an illegal operation, and in the return of a verdict of wilful murder by some person unknown. The prisoner said he was innocent of the charge, and the judge said he did not propose to punish him for the suspicions entertained by the police respecting him.

Although the prisoner in this case was described as a physician, the designation was incorrect. He lost all claim to any such title eleven years ago, namely, in July, 1900, when the Royal College of Physicians of Ireland, whose licence he had obtained in 1881, struck his name off the roll as a consequence of the General Medical Council having found him guilty of infamous conduct in a professional respect and having erased his name from the *Medical Register*. The ground of this conviction was that in the course of an action in the High Court at which Mr. Lumley had given evidence it was shown that he had submitted a fraudulent account to the husband of the defendant in that action, with the intention of deceiving him into a belief that he had professionally attended his wife and in order to induce him to pay the amount due for these pretended services. At this time the prisoner was resident in Jermyn Street, and he appears to have continued to practise medicine at various addresses in London since the erasure of his name from the *Register*.

Universities and Colleges.

UNIVERSITY OF LONDON.

MEETING OF THE SENATE.

A MEETING of the Senate was held on December 13th, 1911.

Recognition of Teachers.

The following were recognized as teachers of the university in the subjects and at the institutions indicated:

King's College.—Mr. Charles Frederick Myers-Ward (Physiology).

St. Thomas's Hospital Medical School.—Mr. John Prescott Hedley (Diseases of Women), Mr. Walter Goldie Howarth (Laryngology), Dr. Maurice Alan Cassidy (Clinical Medicine).

King's College Hospital Medical School.—Dr. Harold Waterlow Wiltshire (Clinical Medicine), Dr. Herbert Willoughby Lyle (Ophthalmology), Mr. Thomas Percy Long (Clinical Surgery).

St. Mary's Hospital Medical School.—Dr. Joseph Blumfeld (Anaesthetics), Dr. George Coats (Ophthalmology), Dr. Robert Henry Cole (Mental Diseases), Dr. Vincent Zachary Cope (Clinical Surgery), Captain Stewart Ranken Douglas (Bacteriology), Mr. Bernard Henry Spilsbury (Pathology).

Bethlem Royal Hospital.—Dr. John George Porter Phillips (Mental Diseases).

Royal Dental Hospital and London School of Dental Surgery.

The Royal Dental Hospital and London School of Dental Surgery was admitted as a school of the university in the Faculty of Medicine (in dentistry only) for a period of five years as from October 1st, 1911.

Imperial University Congress.

It was reported that Dr. Alex Hill, M.A., M.D., F.R.C.S., formerly Master of Downing College, Cambridge, had been appointed Secretary to the Imperial University Congress to be held in London next July, in place of the late Dr. R. D. Roberts.

Readmission to the Faculty of Medicine.

Mr. C. F. Myers-Ward, L.R.C.P., M.R.C.S., has been readmitted to the Faculty of Medicine.

Appointment of Representatives.

Dr. R. H. Cole has been appointed a Governor of the Slough Secondary School.

Professor H. R. Kenwood, M.B., D.P.H., has been appointed in respect of University College as the representative at the Congress of the Royal Sanitary Institute to be held at York in July, 1912.

Advanced Lectures in Physiology.

The following advanced lectures in physiology are announced to be given during the second term:

1. Dr. A. Waller, F.R.S., at the university: Four lectures on recent work in physiology relating to the circulation and to the nervous system, with special reference to the human subject, on Tuesdays at 5 p.m., beginning January 23rd.

2. Dr. Henry Head, F.R.S., at University College: Eight lectures on the afferent nervous system, on Fridays at 5 p.m., beginning January 26th.

3. Dr. Otto Rosenheim, at King's College: Four lectures on some questions of chemical pathology related to physiological processes (for instance, diabetes, fatty degeneration, cancer), on Mondays at 4.30 p.m., beginning January 29th.

4. Dr. M. S. Pembrey, at Guy's Hospital: Eight lectures on milk, on Thursdays at 4 p.m., beginning on January 18th.

Courses 2 and 4 have been recognized by the Senate as courses of advanced lectures which a candidate at the B.Sc. (Honours) Examination in physiology may name for part of his examination. Course 1 was originally announced as eight lectures and as such had been similarly recognized, but in view of the fact that the course now consists of four lectures only, this recognition has been withdrawn.

Lectures by Professor of Protozoology.

Professor E. A. Minchin, F.R.S., will give a course of fourteen lectures on the haemoflagellates at the Lister Institute of Preventive Medicine, Chelsea, on Tuesdays and Fridays, at 5 p.m., commencing on January 16th.

Chadwick Lectures.

Sir Alexander Binnie, M.Inst.C.E., will deliver, at the Institution of Civil Engineers, the four Chadwick Lectures on water and water supply on Thursday, February 1st, 8th, 15th, and 29th, at 5.30 p.m.

Lectures of Superintendent of the Brown Animal Sanatory Institution.

Mr. F. W. Twort, M.R.C.S., L.R.C.P., Superintendent of the Brown Animal Sanatory Institution, will deliver, in the theatre of the Royal College of Surgeons, Lincoln's Inn Fields, a course of five lectures on a study of Jöhne's bacillus of cattle and lepra bacilli of man and rats on Monday, January 8th, and the four following days, at 4 p.m. The lectures are given under the will of the late Mr. Thomas Brown.

Francis Galton Laboratory Lectures.

A course of eight lectures on Tuesday evenings, beginning on January 30th, 1912, will be given in the theatre, University College, at 8.30 p.m., as follows:

1 and 2. Professor Karl Pearson: (*a*) Sir Francis Galton, his Life and Parentage (January 30th); (*b*) Sir Francis Galton, his Work and Teaching (February 6th).

3. Ethel M. Elderton: Infantile Mortality: The Employment of Mothers and the Occupation of Fathers (February 13th).

4. Major Greenwood, jun., M.R.C.S., L.R.C.P.: Infantile Mortality in Relation to Administrative Control (February 20th).

5. David Heron, D.Sc.: A Study of Extreme Alcoholism (February 27th).

6. N. Bishop Harman, M.B., F.R.C.S.: Some Signs of Physical Degeneracy and their Lessons (March 5th).

7 and 8. Professor Karl Pearson: (*c*) Tuberculosis: Heredity and Environment (March 12th); (*d*) Social Problems: Their Treatment, Past, Present, and Future (March 19th).

The fee for the course is 10s. 6d.

School of Architecture.

The Senate accepted with cordial thanks the offer of an anonymous donor to give £30,000 for the erection of buildings on the University College site for the combined School of Architecture to replace the schools now separately conducted at University and King's Colleges.

UNIVERSITY OF LEEDS.

Degrees.

AT a congregation on December 21st, 1911, degrees of Bachelor of Medicine and Bachelor of Surgery were among those conferred:

A. L. Bastable, *H. Caplan, J. B. T. Keswick, C. J. H. Little, G. E. MacVie, F. W. Nunneley, *W. Robinson, *J. B. Sinson, *J. P. Walker, F. Wigglesworth.

* Second Class Honours.

Examinations.

The following candidates have been approved at the examinations indicated:

SECOND M.B., CH.B., PART I (*Anatomy and Physiology*).—W. D. Anderton, S. N. Cohen, J. J. Digges La Touche, H. Foxton, F. King, W. H. Lonen, H. W. Robinson, H. Sochet, J. Wilkinson, C. Wilson.

FINAL M.B., CH.B., PART I.—L. H. Butler, L. Dunbar, F. H. Kitson, K. Menon, J. J. Pickles, H. P. Shacleton, H. Sinson, J. Wright.

D.P.H.—*Part I*, G. O. Chambers, H. F. Horne. *Part II*, C. C. Pickles.

The next term of the University begins on Wednesday, January 10th.

UNIVERSITY OF GLASGOW.

Council Register.—The register of the General Council of Glasgow University for 1912 has now been made up and authenticated in terms of statute and ordinance. It contains 8,245 names as compared with 7,946 in the previous register, an increase of 299. During the revision the names of 400 new members were added and those of 101 deceased members deleted. There is, however, room for considerable improvement in the important matter of the intimation of deaths and alterations of address, as among the 101 names deleted were those of one who died so long ago as 1877, one in 1881, one in 1898, one in 1899, and three in 1900.

Statistical Report.—The annual statistical report by the University Court of the University of Glasgow to the Secretary for Scotland was issued on December 28th as a White Paper.

LONDON SCHOOL OF TROPICAL MEDICINE.

THE following candidates were approved at the examination held at the end of the thirty-seventh session:

*W. D. Wright, Captain, I.M.S., *C. F. Simpson, B. A. Percival, W. Y. Turner, E. J. Quirk, J. W. Tomb, J. W. Thomson, R. Semple, M. Salih, L. Sammy, P. L. Craig, Miss L. E. Watney, R. Willan, W. B. A. Moore, E. J. Powell, M. Graves, W. Browne, S. Goodbrand, W. A. Nicholson, H. Ostrom, Miss M. Pantin, R. Muglistone, D. C. Robertson, G. Girgis El-daba, J. G. Morgan, E. Ward, C. H. Crooks, N. Mahrus.

* Passed with distinction.

About half these successful candidates are medical officers in the Colonial Medical Service.

APOTHECARIES' HALL OF IRELAND.

THE two courts of examiners have been constituted as follows:

Court A.—Chemistry and Physics: Professor H. Ryan, J. J. O'Sullivan. *Biology and Physiology*: G. M. Keating, W. O'Kelly. *Anatomy*: D. B. Kennedy, A. Charles. *Pharmacy*: F. G. Adye-Curran, J. D. Crinion. *Materia Medica*: T. G. McGrath, J. C. McWalter. *Pathology*: R. J. Rowlette, G. B. White. *Medical Jurisprudence*: F. K. Cahill, W. Fottrell. *Hygiene*: Sir C. Cameron, R. P. McDonnell. *Medicine*: J. Lumsden, C. J. Powell. *Surgery*: Sir T. Myles, Professor Conway Dwyer. *Midwifery*: Seymour Stritch, P. T. McArdle. *Ophthalmology*: E. Magennis, R. J. Montgomery.

Court B.—Chemistry: J. C. McWalter, R. P. McDonnell. *Materia Medica*: J. D. Crinion, F. G. Adye-Curran. *Pharmacy*: J. A. Whelan, T. G. McGrath.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

CORRESPONDENTS not answered are requested to look at the Notices to Correspondents of the following week.

TELEGRAPHIC ADDRESS.—The telegraphic address of the EDITOR of the BRITISH MEDICAL JOURNAL is *Aitiology, London*. The telegraphic address of the BRITISH MEDICAL JOURNAL is *Articulate, London*.

TELEPHONE (National):—
2631, Gerrard, EDITOR, BRITISH MEDICAL JOURNAL.
2630, Gerrard, BRITISH MEDICAL ASSOCIATION
2634, Gerrard, MEDICAL SECRETARY.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

E. H. B. asks for any suggestions with regard to the cause and treatment of bagginess or oedema of the lower eyelids. There is no disease of the heart or kidneys, and a slight error of refraction is corrected by glasses.

ANSWERS.

A. M. writes in answer to E. K.: I had a shipwright under my care who suffered from an irritable erythematous rash whenever he worked in teak.

FACTITIOUS URTICARIA.

DR. H. J. THORP (Ipswich) writes, in reply to "F. B.," that very many cases of chronic urticaria are of neurotic origin and associated with other disturbances of the nervous system requiring rest of body and mind. Complete change of air sometimes succeeds when all other remedies fail. A careful and well regulated diet is important. As to medicine, a mixture of sodium bicarbonate and gentian should be taken before each meal.

LETTERS, NOTES, ETC.

"PATENT CURES."

CAPTAIN L. BERTIE MILLINGTON, R.E. (Royal Societies Club, S.W.), writes: As a layman as regards your profession, might I suggest that qualified medical men generally should give more attention than they have done lately to various "patent cures," etc. As things are, we trust our own family doctors, but find that our subordinates prefer to buy sixpennyworth of some well-advertised patent medicine, with a virtuous hope that they will be at once rejuvenated. I think the tax on "patent medicines" probably does this, because it makes them more expensive, and, with the uneducated, the more things cost the better they must be.

FEES FOR REPORTS UNDER THE WORKMEN'S COMPENSATION ACT.

PRACTITIONER writes: I find that an attempt is being made at the present time by insurance companies to pay a fee of 10s. 6d. for medical reports respecting the condition of workmen claiming under the above Act. In my own experience I have been offered a fee of 10s. 6d. twice within the past two or three weeks, whereas the recognized fee for such reports has always been one guinea. I trust that members of the profession will steadfastly resist this attempt to cut down their remuneration, and that they will decline to examine and report on any case for less than one guinea.

*** This matter was brought before the Annual Representative Meeting at Birmingham by a resolution moved by Dr. F. E. Wynne on behalf of his Division, suggesting that in cases arising under the Workmen's Compensation Act the minimum fee for the initial examination and report should be £1 1s. After two amendments had been moved it was decided to refer the matter to the Council for consideration and report.

TOO OLD AT FORTY.

OVER FORTY.—I desire to enter an emphatic protest against the frequency with which the stupid "too old at forty" craze is now being put into practical operation.

Public bodies in making appointments are conspicuous in this evil tendency of thus limiting the age of applicants, and thereby, I venture to think, are not only guilty of exhibiting very serious ignorance, but of perpetrating gross injustice to the public and other persons whom they fail to enlist in the public service. The age disqualification which is taking place amongst working men bids fair to become a very serious element in the social problem of the future, but when such conditions are applied to the professions, the veriest optimist is disposed to become apprehensive. Surely the age of 40 is just about the time when a man begins to achieve some degree of level-headedness and common sense and to profit by the many shortcomings of his past experience. He looks back and sees a woful lack of tact here, a foolish indiscretion there, and everywhere illustrations and instances of his want of knowledge of human nature, of men, and affairs. Is not the period from 40 to 60 the sanest, wisest, and most evenly balanced, both physically and mentally, in the whole span of life? The London County Council are this week advertising for six medical assistants in the Public Health Department, but none over 40 need apply.

I have no wish to make youth a disqualification, but I think there are abundant reasons why, at any rate, it should not be a *sine qua non*. There was a time when youth and inexperience were considered disqualifications, but the modern tendency is diametrically opposite, and, whilst a man must hope to do little until he reaches 30, he must nevertheless be shelved at 40. Another evil is that, if he wishes to enlarge his experience or his salary by a change in his appointment, this must be done by the age of 39, or he must "stick."

It seems to me this matter is of essential importance, and one which the British Medical Association in the interests of the profession should seek to rectify, and I am confident it will be of service.

In conclusion, let me bid you turn to the legal profession, and imagine the absurdity of the age of 40 being considered too senile for election to the Judicial Bench; or turn to the Church, and imagine the Premier searching about for some experienced divine under 40 to appoint to the next vacant see.

AUSTRALIA FOR THE SONS OF MEDICAL MEN.

MR. RICHARD ARTHUR, M.D., C.M.Edin. (President Immigration League of Australasia), writes: The sons of medical men in the United Kingdom often enter the profession of which their fathers are members, but I understand that the medical profession is overcrowded in England and that Mr. Lloyd George is going to make the prospect of entering it more uninviting than ever. Even in Australia, where the conditions at present are somewhat better, the Universities of Sydney, Melbourne, and Adelaide are turning out hundreds of young doctors, and their numbers are increasing faster proportionately than the population.

It is a serious question nowadays for a medical man as to whether his son should follow in his footsteps, or whether he might not do better by looking elsewhere. After much consideration I decided that my own son should take up farming in Australia, and I am more and more convinced that this decision is in his true interests. He is spending three years at the premier agricultural college in Australia—the Hawkesbury College, near Sydney. There he is learning both the science and the practice of farming, and the fees, including the most excellent board and lodging, are £30 for the first year, £20 for the second, and £10 for the third. Other expenses and pocket money come to about £20 a year. At the other colleges in New South Wales £15 is charged for the first year and the second is free. At the Hawkesbury College the students attend lectures and the laboratory one day and are in the fields the next, thus obtaining a really practical training. They have plenty of recreation—cricket, tennis, shooting, swimming—with occasional concerts and dances, and they have an alive Students' Christian Union. Now if a lad goes through the medical course in England it means an outlay of about £1,000. For this amount he could obtain not only a thorough training in agriculture in Australia, but could pay a deposit on land and stock it.

The life is undoubtedly hard and strenuous, with much monotony, but it is healthy, and the financial rewards are generally ample to a man with grit and perseverance. I recommend the college course, so that a lad may be broken in gradually to the life among his fellows, instead of going direct to a farm and facing the continuous toil on it. There are similar colleges in Victoria and South Australia, where young Englishmen are received. A few vacancies at these colleges are reserved for students from abroad, but it would be well for any one wishing to enter his name to do so as quickly as possible. Our agents in London at 50, Parliament Street, S.W., would make arrangements to this end if communicated with, or I would be glad to answer any letters if addressed to me at Parliament House, Sydney, N.S.W.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Eight lines and under	0	4	0
Each additional line	0	0	6
A whole column	2	13	4
A page	8	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

A Lecture

ON THE

EVIDENCES OF AURICULAR FIBRILLATION, TREATED HISTORICALLY.

DELIVERED AT UNIVERSITY COLLEGE HOSPITAL,

BY

THOMAS LEWIS, M.D., M.R.C.P., D.SC.,

LECTURER IN CARDIAC PATHOLOGY, UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL; PHYSICIAN TO OUT-PATIENTS, CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST.

IT is not always an easy task to choose a subject for an isolated and formal hospital lecture, and it has been especially difficult for me in that my recognized function as a lecturer covers a small field. It occurred to me that, speaking in this building, I could not do better than select a subject in which University College Hospital may claim a special interest, and describe to you the course and result of certain observations which have been made in this school since many of you joined it. I refer to an affection of the heart beat which is now spoken of as *auricular fibrillation*.

Let me preface a largely personal narrative by saying that, while the knowledge that fibrillation of the auricles is a common event in clinical cases came to me as a result of my own observations, I can take little credit to myself on that account, but, with others, regard the proof as the inevitable outcome of the introduction of new methods. So, with this introduction, I will recite the history of our knowledge of this affection in the light of my own experience during the past three years. If this recital does nothing more, it may help to emphasize the limitations of our methods as we employ them in investigating disease, and impress the necessity of grasping any new means within our reach of forwarding our object—the elucidation of human maladies. You know how closely disease is scrutinized by hosts of ready workers; and you will discover, if it is not already known to you, how speedily the advantage of each new stratagem, and each new engine of warfare, which medical ingenuity invents in its struggle with its enemy, disease, is exhausted.

A new line or means of transit is developed, the opportunity is seized on all sides, a stride is taken; some shuffling adds a little to the progress and establishes the move by fortifying the new position; then comes the long wait until once more new cover or new means of reaching it is perceived, and the slow march is continued.

The history of the recognition of fibrillation of the auricles will impress you with the dimness of our eyes and the opacity of the obstacles which embarrass our vision. You will know how blind we have been to things which, once seen, are so apparent.

The investigation starts so far back that none can see its beginning. Suffice it to say that for many years medical workers have written of a gross irregularity of the ventricular and arterial pulsations, occurring especially in patients in whom cardiac failure is imminent, and in whom cyanosis, venous engorgement and dropsy are outstanding features. You all know these patients; you have all seen the picture, hung from time to time as it is in the galleries of disease which our wards constitute: the body raised with pillows, the haggard and anxious countenance; the glistening eye, its white oft tinged with yellow; the flushed cheeks; the full, plum-coloured and open lips; the laboured breathing; the prominent precordial bulging; the confused and wavy impulses which hurry from interspace to interspace; the swollen legs and belly. Here it is but rarely that one seeks in vain the pulse which bears distinctive qualities. Its rapid action, the utter disorder of rhythm, the hopeless jumbling of strong pulsations with quick runs of almost imperceptible beats, the changing length of intervening pauses, are all characteristics.

It is this pulse which forms our starting point. It has been figured and described by many, but its significance has only lately been realized. Named by Hering the *pulsus irregularis perpetuus* in 1902, on account of its supposed permanence, it has received close study for many years. But little came of this study, and the similar perturbation of the ventricle, to which it evidently owed its origin, was regarded for a long while as an expression of deficient co-ordination in the heart. The complexity of the movements seemed to defy investigation.

The first real step came with Mackenzie's observation, that whenever such a pulse is found, no trace of auricular activity can be identified (Fig. 1). Mackenzie had discovered a means of obtaining graphic records from the jugular pulse, and the curves obtained were really indices of the pressure changes in the right auricle. He developed a *new method*—the analysis of irregularities of the heart—by recording the contractions in its several chambers. In a normal venous curve each upstroke of the carotid is preceded by a prominent wave (Fig. 1, A) known to result from auricular systole (*a*). This wave is missing whenever the pulse shows the characteristic irregularity. Moreover, he showed that it vanishes when the irregularity suddenly appears (Fig. 1, B)

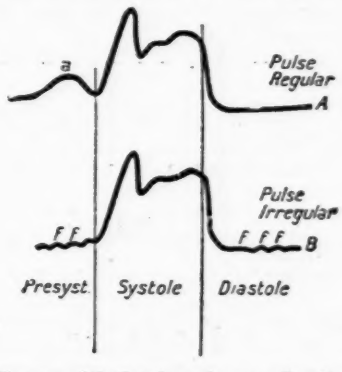

Fig. 1.—A diagram of the jugular pulse: A, when the heart beats regularly; B, when it shows the irregularity described in this lecture. In A, the presystolic pulsation *a*, which is due to the auricular contraction, is present. In B it has disappeared completely. When the pulse is slow but irregular, *a* may be replaced in the jugular curve by small and rapid oscillations *f f*.

in a patient whose pulse has previously been regular. Another fact was elicited by the same worker. He noticed in a case of mitral stenosis that, where a presystolic murmur had been present, this murmur was lost when the pulse became disorderly. He rightly attributed the original murmur to auricular systole, and explained the two phenomena, namely, the absence of auricular pulsation in the neck and the absence of auricular murmur in the chest, by supposing a change in the action of the auricle. The actual change postulated was *paralysis of the auricle*. But Mackenzie, on continuing his researches, found not only that with the restoration of the regular rhythm the auricular wave is restored, but that, in cases which succumb without such restoration, the right auricle may show considerable hypertrophy. These facts ultimately led him to the rejection of his first hypothesis. Believing that a hypertrophied auricle could not remain inactive, and holding abrupt paralysis and abrupt renewal of the auricular systole to be improbable, he sought a new explanation and concluded that auricle and ventricle contract together; for under these circumstances the evidences of the auricular contraction would be buried in the ventricular systole. But simultaneous contraction of auricle and ventricle required explanation; and Mackenzie, influenced by certain histological findings, expressed the view that auricle and ventricle commence their contractions together because the stimulus awakening contraction starts in the tissue which lies between them and unites them, namely, the upper end or "node" of the auriculo-ventricular bundle. Here is the origin of the term "nodal rhythm."

I have wandered from facts to hypothesis, and now return; the same papers which located the disturbance in the node emphasized the invariable association of the irregular pulse with the absence of signs of auricular activity. The importance of this emphasis was considerable, for it materially helped to establish the irregularity as one *sui generis*. This should be clear. If we find scattered bacteria which have a fixed and distinctive microscopic appearance, they are not therefore regarded as forming a single and distinct type; but if their growth in culture media is associated with constant phenomena, the culture tests are further evidence that we deal with

a single organism. So with the irregularity: it presented distinctive qualities wherever found—evidence in itself insufficient though suggestive. But the discovery of a second constant character, the change in auricular mechanism, bore witness to the view that a single and distinct disorder was under observation.

Such was the position when first I became acquainted with it. It was known from Mackenzie's work that a gross irregularity of the heart was always accompanied by a change in auricular action, and, further, the irregularity seemed to be an entity separable from all other cardiac disturbances. Yet at that time the first generalization was alone outstanding, and there was always a feeling of some insecurity in regard to the second. At this time, too (1908), the "nodal rhythm" hypothesis was at its acme; in this country, at all events, it was generally regarded with favour, and the term had been widely adopted. It is difficult for me to say, looking back, though it is not so far away, to what extent I regarded it as a probable explanation. My papers, written at that time, are guardedly expressed when the term "nodal rhythm" is used: I was certainly far from a whole-hearted acceptance of it.

The awakening was a sudden one. In the first week of October, 1909, a man came to my out-patient department at the City of London Hospital; he showed paroxysms of a peculiar form of tachycardia. It is not necessary to enter into a detailed description of the curves obtained from him at this and his subsequent attendances at University College Hospital. It will be sufficient if it is stated that I was confronted with a case in which I believed that a rhythm coming from the "node" was clearly demonstrable. It was *a new method*, namely the electro-cardiographic, which gave the facts to argue from. It was this patient who first convinced me that the heart irregularity of which I speak to-day could not be due to a "nodal rhythm," for the signs which he presented were totally different from those exhibited by the other patients. His attacks were of *regular* tachycardia, and it brought home the contrast, and emphasized the *irregularity* of the other condition as its leading quality. From the day on which I first saw this patient my interest was centred in the cause of the irregularity, so commonly seen in heart failure, the condition then attributed by others to "nodal rhythm."

In the introductory remarks reference was made to blindness to facts which afterwards seem so evident. At this time, when I felt that the "nodal rhythm" hypothesis was no longer tenable, a series of electro-cardiographic curves from dogs in which the auricle was fibrillating (as a result of stimulation with a faradic current), and a second series from patients collected in the wards of this hospital, and in whom the irregularity in question was present, were in my possession; yet for some little while I failed to perceive that the secret lay almost bare before my eyes; and this was the more surprising, for in a paper already written and in the press * I had briefly described both series of electric curves.

We may now go back to a paper written by Cushny and Edmunds. In 1906 these authors described the arterial curves obtained in dogs when the auricle was thrown into fibrillation, and they compared them with the curves of a patient in whom paroxysms of irregular tachycardia had occurred from time to time. They tentatively suggested that the irregularity might have had a similar origin in patient and dog. I believe that it was a remembrance of this paper, read some time before and forgotten, which finally led me to examine the irregularity of auricular fibrillation more carefully.

Comparing the electric curves in my possession, it immediately became obvious that discovery was not far away, and a further and larger series of jugular and electric curves were taken from a dog. My conviction on the subject dates from the experiment performed on this animal on November 11th, 1909. Having sufficient data I visited Dr. Mackenzie, for it was imperative that if the new view were to gather force I should win his assent. In taking venous curves from the dog I used the ordinary clinical polygraph, obtaining venous and radial curves, so that they had the appearance of clinical records. There were normal curves showing *a* waves, and curves from the fibrillating heart in which the venous pulse was of the ventricular form, and from which all sign of auricular contraction had vanished. I placed them before him without comment, and he stated his belief, as I had hoped, that they were from a patient with "nodal rhythm." From this moment my task was easy, for the electric curves which I had obtained were equally convincing.

It was in this manner that the auricular fibrillation theory won Dr. Mackenzie's support—support so generously given and so valuable, for it was withdrawn from the rival hypothesis, "nodal rhythm." But several points remained to be cleared. In some of the venous curves from patients in whom the heart-rate was slow, very small oscillations occurred in the venous curves (Fig. 1, B, *f*); they had been described by Mackenzie, and he had actually attributed them, in the year of Cushny and Edmunds's paper, to fibrillation of the auricle, but in a later publication he stated that the waves which he had taken for those produced by a fibrillating auricle were in reality the result of a fault in the method of registration. These little waves now assumed more consequence, and by stimulating the vagus in an animal in which the auricle was fibrillating and thereby slowing the ventricle, I was able to show that such waves are actually produced by a fibrillating auricle.

The position of the evidence at this stage may be summed up in the statement that the arterial, venous, and electric curves had been found identical in experimental auricular fibrillation on the one hand and in the irregular hearts of patients on the other. It was then that I published my preliminary communication.[1] Almost immediately afterwards a paper by Rothberger and Winterburg came into my hands for the first time, and in it these writers also emphasized the similarity of the electric curves in the experimental and clinical conditions. The observations of Rothberger and Winterburg actually preceded my own, and were published in July, 1909; they have since been confirmed by a number of other workers.

Now the similarity of the curves taken in three ways from animal and man constituted very striking evidence; yet the proof to-day is based on these and a number of still more convincing observations.

In the remainder of this lecture this evidence will be dealt with, and I will begin with a detailed description of the electro-cardiographic curves. In my introductory remarks I spoke of advance in knowledge when a new method is discovered. It is to Einthoven's string galvanometer that we are indebted for the ultimate solution of the problem—the problem of the causation of the gross irregularity which is seen in clinical subjects. When you connect the limbs of a patient (for example, the right arm and left leg) by means of baths of salt solution and wires to this sensitive instrument, it gives a record of the heart beat, which depends upon the electric current evolved in the heart by the contraction of its muscle.

In an electro-cardiogram from a normal human subject each heart beat is represented by three chief movements of the recording instrument (see Fig. 2). The first of these (marked P) is due to auricular contraction. Inspect the ventricular portion of the curve; R is a steep and pointed summit, while T is broad and rounded. The shape of this whole ventricular curve, as we now know, is significant of contraction of the ventricle in a given direction. Such curves are yielded when the ventricle contracts in response to an excitation coming to it from the direction of the auricle (that is to say, through the bundle), and by no other form of ventricular contraction.

Now the curves of patients who have complete pulse irregularity give several important pieces of information. I show such a curve in Fig. 3. You see the peaks, R and T, which represent ventricular contraction. The individual cycles closely resemble individual normal cycles. The conclusion to be drawn from this fact will be obvious: the ventricle has received its impulse from the direction of the auricle and the disturbance in the mechanism of the heart beat as a whole must *therefore be sought in the auricle*. Secondly, you note that P, the auricular summit, is not present, a fact which confirms the findings of the venous tracings and emphasizes the absence of a co-ordinate and presystolic auricular contraction. Thirdly, you will be struck by the presence of a number of small

* The paper was actually published in *Heart*, 1909, vol. i. issued on November 1st, 1909, and the descriptions appear in footnotes on pp. 119 and 127.

oscillations running throughout the whole curve. The electro-cardiograms from these cases show four things:

1. The absence of a normal auricular contraction.
2. The presence of a type of ventricular beat which indicates its origin in an impulse received from the auricle.
3. The special oscillations.
4. Constancy of the picture, from patient to patient, in respect of the first three points.

We may deal with the last first. The constancy in the type of electric curve proved finally that the gross irregularity is a single and isolated condition, a disturbance *sui generis*. But what of the oscillations? We have seen that the experimental curves of fibrillation of the auricle had been found to be similar. They present similar oscillations. Further experiment upon the dog quickly revealed the origin of these oscillations in the fibrillating auricle, for the oscillations are maximal when the wires connect this heart chamber directly to the galvanometer. No such oscillations, or only very much smaller ones, and these transmitted, are seen when the instrument is connected either to the ventricle or to other parts of the body. It seemed desirable that similar evidence should be obtained in the human subject, and this more especially as the oscillations in human curves had been ascribed by Hering to tremor of the body muscles. The required evidence was obtained by discarding the usual points of contact—namely, right hand and left foot; for if such points are joined to the galvanometer the whole heart and whole trunk and two of the limbs are interposed between the points of contact, and the oscillations in the curve might come from any part of this tissue mass. The galvanometer was connected to the end and base of each separate limb; no oscillations came from either arm or leg. Similarly it was shown that none come from either abdominal or back muscles, but that as soon as the contacts are brought near the heart the oscillations become prominent. Using smaller electrodes as contacts, and studying the area of the precordium alone, in a case where the right auricle was enlarged, it was found, further, that the oscillations are largest when the electrodes lie directly over the right or superficial auricle. This auricle or its immediate neighbourhood was fixed as the point of origin of the oscillations, and as the oscillations were found to be continuous throughout the whole cardiac cycle it became evident that such oscillations could be produced only by a muscle mass in continual activity and lying in this region. A fibrillating auricle alone fulfilled these conditions. This—the location of the maximal oscillations and the demonstration that they are continuous—is one of the strongest evidences which we now possess in support of the occurrence of auricular fibrillation in the cases considered. The oscillations come, as I have been able to show recently, from an area of chest wall which gives, when the heart beats normally, the largest electric summit corresponding to auricular systole.

I now come to what I regard as the last and most conclusive proof of the theory. The appearance of a fibrillating auricle is quite distinctive. It does not contract co-ordinately—that is to say, as a whole—but its walls stand in diastole, a position of virtual paralysis; yet inspection of the surface shows that its muscle is broken up into a multitude of small areas, each of which seems to be contracting vigorously, but with no relation to the contraction in surrounding areas. When you compare the appearances of co-ordinately contracting and fibrillating auricle, you may draw parallels between this chamber and a surface of water, disturbed on the one hand by great billows and on the other by a downpour of rain. In the normally beating heart the regular waves of contraction give rise to regular beats of the ventricle; in fibrillation haphazard impulses issue from the auricular turmoil and stimulate the ventricle. Thus the irregularity of the ventricular beating is produced. But that is not the point to be emphasized, though it explains the pulse irregularity, an explanation which no other hypothesis attempts. The point to lay stress upon is that the visible signs in the heart are distinctive and easily recognizable.

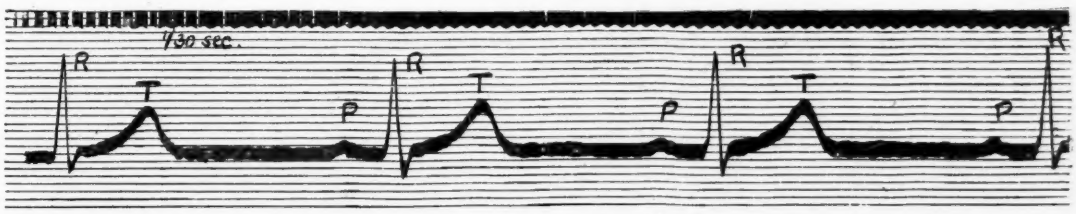

Fig. 2.—An electro-cardiogram from a normal subject, showing the usual electric variations, P, R, and T; P corresponds to auricular contraction, R and T correspond to ventricular systole. The time is in $\frac{1}{30}$ second.

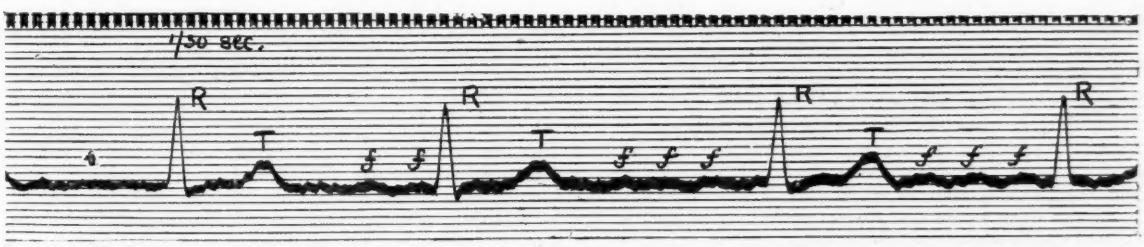

Fig. 3.—An electro-cardiogram from a patient showing complete heart irregularity. The ventricular variations, R and T, are seen, though they are not placed regularly. P is absent; it is replaced by the oscillations, *f f*, which are derived from the fibrillating auricles. Time in $\frac{1}{30}$ second.

You will see from what has been said, how important an actual view of an auricle would be if the heart beat in a grossly irregular fashion. The opportunity came when, in searching for similar disease in the lower animals, I found it in the horse. Largely through the kindness of Dr. Woodruff—whom many of you know, for as a veterinary surgeon he came to study human ailments in this hospital—I was able to show that horses are subject to the same heart disorder, and that the curves given by such hearts are of the same form as those seen in man. The final opportunity of examining a horse suffering from a degenerate heart and giving the recognized signs occurred on Bulford Plain. The chest was opened while the heart was still beating, and I obtained, as did those with me, a clear view of a fibrillating auricle, brought to this state, not by experimental interference, but by disease. It is this observation which has dissolved remaining doubt and which has placed the theory in so secure a position. We now know quite definitely that auricular fibrillation may occur and persist as a manifestation of disease.

Is there any further evidence which might be obtained? Yes, in two ways! One has been indicated already. Sooner or later a fibrillating auricle will be seen in the human chest, opened by a surgeon for the relief of his patient. The second is, perhaps, less satisfactory to the end we consider. You know that the rabbit's heart may be revived after death by perfusion and that activity may

be sustained for considerable periods, but you may not know that the same has been shown for the human heart several hours after death. It is quite within the bounds of possibility that if, in the hands of one accustomed to the method, a heart is taken from one of the patients some while after death, the revival of such a heart may be possible. And it is also probable that in reviving it will return to its former mode of beating—that is to say, the auricle will be seen in fibrillation.

But these are facts which it is for the future to reveal. For the present we must rest content with the proof as I have given it.

Finally, let me refer quite briefly to the results of this conclusion. It explains not only the irregularity as we witness it, but it explains almost all the remaining phenomena which are associated with it as a mechanism—facts which I pointed out in my first communication.

When a healthy dog's auricle passes into fibrillation, the ventricle doubles or trebles its original rate; the gross irregularity of our patients is accompanied by tachycardia. The conclusion explains why digitalis acts so magically in slowing such hearts, for digitalis produces heart-block and heart-block slows the ventricle when the auricle fibrillates. It also explains the spontaneous slowing or original slowness of the ventricular action in some patients, for here disease has affected the conducting tissues and has impeded the rapid and irregular impulses from reaching the ventricle.

In brief, the original rapidity of the pulse and its irregularity, the character of the irregularity, the loss of the auricular wave in the neck, the loss of the P summit in the electro-cardiogram, the loss of presystolic murmurs, the presence of rapid oscillations in the venous curve, the presence of oscillations in the electro-cardiogram, the varying rate of the ventricle in a single patient or from patient to patient, the action of digitalis—each and all are clear once the true explanation of the mechanism is grasped. And this explanation, as I have shown you, is that in such cases we have to deal with fibrillating auricles.

REFERENCE.
[1] BRITISH MEDICAL JOURNAL, November 27th, 1909.

THE EFFECTS UPON THE HEART OF SOLUBLE DIGITOXIN, AN ISOLATED GLUCOSIDE OF THE DIGITALIS GROUP.

BY

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ALTHOUGH digitalis is one of the most valuable of all our cardiac drugs, its therapeutic administration still lies at a stage of development comparable to that of the use of decoctions of cinchona bark before the isolation of quinine.

The physician is still, unfortunately, forced to prescribe an infusion or tincture of digitalis leaves prepared on the same principles as a cup of tea, although the toxicity of the product so administered may vary as much as that of the domestic beverage.

As a matter of fact, when either an infusion or tincture of digitalis leaves is prescribed, not one remedial agent is employed but a blunderbuss of about half a dozen bodies with powerful cardiac action, some undoubtedly favourable for the condition to be combated, others as equally certainly unfavourable in their continued effects upon cardiac muscle.

The reason for this state of affairs in regard to digitalis therapy does not lie so much in a want of knowledge as in a plethora of knowledge, for instead of having in the digitalis leaves one predominatingly important active substance, as in the case of quinine or caffeine, we have, as in the case of the morphine alkaloids, a number of active bodies requiring a great deal of experimental labour and clinical experience to decide between their relative values and uses.

In order to surmount some of these difficulties in the clinical use of digitalis there has been introduced in recent years the process of physiological standardization in order to give some idea of the approximate strength, as a kind of therapeutic battery, of the complex group of bodies probably present in varying relative amount in any given galenical preparation, such as pharmacopoeial infusion or tincture.

Two methods which have been employed for this standardization are (1) the determination of the minimal amount which will, when injected into a lymph sac, cause complete stoppage of the heart of a frog of average size (20 grams weight) within one hour, and (2) the determination of the minimal concentration in Ringer's solution, which when perfused through the isolated mammalian heart, stops all action of the ventricle within one hour. The amount of a good tincture of digitalis required in the first method should not exceed 0.3 to 0.4 c.cm.; and, in the second method, the digitalis preparation should stop the heart within the hour at a dilution of 1 in 200. A third method of experimentation more recently employed by Waller, with interesting results, is to study the effects of the drug in arresting the contractile power of skeletal muscle immersed in the diluted drug. This method has the merit of greater simplicity, and the results seem to resemble closely those obtained with cardiac muscle itself.

But although those methods of physiological standardization may be safely relied on for giving information as to the genuine digitalis nature of a commercial sample, and also some indication as to the careful preparation from "good" leaves, still, as satisfactory scientific and practical methods of dosage they fail in two important aspects.

In the first place, there is no definite standard such as an isolated glucoside of this class would give, if obtainable and universally agreed upon as a standard; there are many isolated products all differing from one another, some soluble and others insoluble, and all varying in their action upon the heart, and as yet pharmacologists have not been able to select any one of these as a unit.

Secondly, the proposed standardization test is a test of "killing power," and physicians do not want to kill, but cure. Underlying this test of killing within a certain time by ventricular arrest is the tacit assumption that it is the same body which kills and produces the favourable therapeutic effect. On any other hypothesis the so-called physiological standardization is meaningless.

The basis of the whole process is that digitalis in small doses stimulates cardiac muscle, and in large doses paralyses it, and hence if in the case of a given preparation we determine the larger dose which kills, we can logically infer what is the smaller dose which will just develop the beneficial therapeutic effect. Now, however sound such argumentation might be in the case of a single active body difficult to isolate, and hence standardized by such an indirect method, it loses all application when dealing with at least four bodies so very different in action and toxicity as are the glucosides of digitalis leaves. The test would only hold if there were the same ratio between maximum therapeutic action and minimal lethal dose for each of these bodies, and experience of both pharmacologist and clinician demonstrates that this does not hold true.

This line of thought holds good not only for the standardization of digitalis, but also for the decision as to whether the usual unknown mixture of the *Pharmacopoeia* should be still used, or whether the active glucosides should be isolated and used separately. There is no question that at least one of the glucosides present in the digitalis leaf—namely, digitonin—is injurious in its action, and ought to be eliminated if possible; and amongst the remaining members of the group there can be little doubt that these vary amongst each other in relative toxicity and degree of excitatory action.

It would have been more scientific to separate these active bodies and make use of them according to the clinical indications in varying cases rather than to fire off a blunderbuss of them all in unknown proportions at the patient's heart.

Here it should be emphasized that it is not maximum toxicity or brute strength that is to be aimed at. If it were so, strophanthin, which is much more powerful, would in all cases be prescribed; but it is easy enough to stop a heart with any of these drugs given in sufficient dose. The active agent to pick out is that one which possesses what might be described as the greatest factor of safety, that is, the highest ratio between the minimal lethal dose and the dose giving a good therapeutic effect. Some attention ought also to be paid to the possibility of accurate

dosage, and here a body which can be completely isolated holds an advantage because the physician knows exactly how much he has given his patient.

The number of bodies possessing an action closely resembling that of the digitalis group upon the heart is an enormous one, and goes on increasing all the time.

In addition to the older well-known remedies, such as squills and strophanthus, there are the plant principles carpain, helleborein, sparteïn, and probably all the members of the huge group of the sapo-glucosides, of which commercial saponin from ordinary quillaia bark is the best-known representative. In this laboratory we have recently investigated two isolated glucosides, one named mowrin, from the mowrah bean of India, and the other called hederin, from the leaves of the common ivy. Both of these bodies possess a remarkably stimulating action on the cardiac muscle, and when perfused through the isolated heart show an increased force of beat and a slowing of the rate, and generally give tracings very similar to digitalis. But, unfortunately, they have in the end an injurious effect upon the heart, appearing to render it oedematous; and also they possess a highly injurious action upon red blood corpuscles, causing rapid haemolysis even in dilute solution. In many respects, both chemically and physiologically, these sapo-glucosides possess an interesting and suggestive resemblance to the bile salts, but their haemolytic and certain other properties rule them out as heart tonics.

In crude digitalis such an injurious sapo-glucoside—namely, digitonin—is always present, and in the infusion its presence is even necessary to dissolve the *crystalline digitoxin*, which is quite insoluble in aqueous solution.

In the process of testing various digitalis preparations dissolved or suspended in saline, according to their solubilities, Waller[1] found that the insoluble preparations were without effect upon the muscle preparation; while those three preparations out of the five tested which were active—namely, *Digitonin cryst.* (Merck), *Digitalinum pulverizatum purum Germanicum* (Merck), and *Digitalinum verum* (Schmiedeberg)—all give a soapy froth on shaking. This is the usual physical index of the presence of a saponin or sapo-glucoside.

In the course of the present work, in order to avoid complicating the results by administration of alcohol at the same time and to render intravenous injection possible, I have evaporated off the alcohol from a tincture of digitalis, and then made the residue up as a fine suspension in an equal volume of saline.

Such a suspension I have found entirely inert upon intravenous injection, and it has occurred to me that the uncertain action of tincture of digitalis, when given by the mouth, may be due to its precipitation in insoluble form when largely diluted with water in the stomach.

It is obvious that amongst these many glucosides possessing a marked cardiac action, if one could be found free from the saponin properties of haemolyzing blood and sufficiently soluble in water to be administered without alcohol, and in case of need given intravenously, it would possess a preference as a cardiac tonic.

Such a substance would appear from Waller's work to be a rarity, but Cloetta[2] claims to have isolated a body with these properties from digitalis leaves in his "digitoxinum solubile." The glucoside exists in the leaves, along with the digitalinum verum of Schmiedeberg, in smaller quantity. The various other insoluble bodies taken out by alcohol, such as Merck's crystalline digitoxin, are, according to Cloetta, isomeric forms of this soluble glucoside, which become polymerized and insoluble in the manipulations necessary for preparation. The soluble body has half the molecular weight of the insoluble crystalline body.

Soluble digitoxin is manufactured by the Hoffmann-La Roche Chemical Works, and is known commercially as digalen. It is dissolved in dilute glycerine solution, containing in each cubic centimetre 0.3 mg. of the isolated soluble digitoxin; that is to say, the solution is so dilute that it corresponds to only 3 parts of glucoside in 10,000. I have to thank Messrs. Hoffmann-La Roche for supplying me in addition with a corresponding solution, in saline alone, to ensure the absence of any glycerine effect, but as no such effect was found, and the glycerine solution best preserves the activity of the glucoside, the commercial digalen was employed for most of the experiments.

Although experiments with red blood corpuscles clearly demonstrated that digalen satisfied the condition of absence of a saponin-like body, there being not the slightest sign of laking, the first impression obtained in studying the action upon the heart by orthodox methods was disappointing, for it looked as if the substance was very weak, as compared with a standardized tincture of digitalis. So it is, if the ordinary sign of stopping the heart within one hour be taken as the standard of therapeutic activity.

Thus, while a standard digitalis tincture injected into the dorsal lymph sac of a frog in an amount of 0.4 c.cm. stopped the heart within the hour, as much as 1 c.cm. of the digalen solution barely did so, the heart beating feebly and at long intervals up to one hour and fifteen minutes.

Again, while 3 c.cm. of the standard tincture injected intravenously in a medium-sized rabbit killed within a few minutes, it was only a dose of at least 10 c.cm. of digalen which sometimes proved fatal in an hour or more in rabbits of about this weight. Given hourly, or two-hourly, in 1 to 2 c.cm. doses, more than 10 c.cm. can be borne by a 2 kg. rabbit in the course of the twenty-four hours. From the point of view of lethal dose, therefore, digalen solution only possesses one-third to one-fourth of the strength of standardized tincture of digitalis. But the question arises, Does the lethal dose, as determined in this way, fix the therapeutic value of the drug? and in our opinion, the effects upon the heart obtained in the experiments on the intact mammal, and the minimal amounts required to develop a marked therapeutic action in the isolated mammalian heart, negative this proposition, and demonstrate on the other hand that the lessened lethal effect is a distinct advantage.

Equivalent amounts of the digalen solution produce as distinct and marked slowing as the tincture, and on listening to the heart the increased force is obvious in the short, sharp systole. It has the further advantage that it can be given intravenously without pain; the absence of alcohol is here a highly desirable factor, and the safe dose is at least treble that of the tincture.

On perfusion through the isolated mammalian ventricle a marked therapeutic effect is obtained with as little as 2 c.cm. in a litre (see Fig. 2), and in the later full physiological effect there is a marked increase in the tonicity of the heart muscle, as shown by the elevation of the base line.

The results appear to indicate that in the use of ordinary pharmacopoeial preparations of digitalis the tonic effects and toxic effects are produced in varying degree by the different glucosides, and that soluble digitoxin is one which possesses more valuable therapeutic properties, with a large factor of safety, than the mixture as extracted in the tincture.

Effects on the Heart in the Intact Mammal.

Rabbits were employed throughout for the experiments, on account of the ease of intravenous injection into the marginal vein of the ear, and for the purpose of comparison with the results of perfusion of the drug in solution in Ringer's saline in the same animal, as shown in the next section of this paper.

It requires some training of the ear to count the rate of heart-beat accurately in the rabbit, on account of the speed of the beat, but the heart-beat, although so rapid, is steady and regular, and with a little practice can be counted quite well.

In addition to the slowing in the rhythm recorded in the experiments below, the ear, after a little training to the work, soon detects and appreciates what the numbers do not show, and that is a sharpening in pitch of the systolic heart-sound, which gives the impression of a sharper blow. This is very characteristic, and corresponds doubtless to the therapeutic stage marked by the increased stroke in the earlier part of each tracing of the effect on the perfused isolated heart, as shown in the next section.

One very striking result, resembling that obtained by Sherrington and Sowton[3] when studying the comparative concentration of chloroform in saline and in serum which acted upon the heart, is seen on comparing the results of this section with the succeeding section, in which the drugs dissolved in saline acted upon the isolated heart. This result is a very beautiful one, and the physico-chemical explanation of it is most interesting and of important practical application in therapeutics, showing

that the dosage of a drug depends on its relative chemical affinities for saline, serum, and cell substance.

When the solution of the digalen is injected intravenously in a 2-kilogram rabbit, it takes about 3 c.cm. to produce a full therapeutic effect with recovery to normal in about two days' time, and even as much as 10 c.cm. can be given without producing a lethal result. Now, if we make the assumption—to be on the safe side—that the blood of the rabbit represents one-tenth of the weight, the amount of fluid in which the 3 c.cm. injected is distributed is about 200 c.cm.* This gives a solution of the digalen solution of about 1 in 70 for the therapeutic dose, and 1 in 20 or less for the lethal dose. If this be now contrasted with the concentration of the drug in saline which acts upon the isolated heart, it is found that even 1 in 500 rapidly gives a large therapeutic effect, and even with this dilution the heart muscle does not remain in equilibrium, but goes on taking up the drug continuously from the saline until it poisons itself, and in about another hour and a half to two hours the heart-beat is enormously reduced, and, in fact, almost stopped, while its muscular tonicity has increased enormously (see Fig. 2); with a concentration of 1 in 200 the rapidity of the whole process is increased, but the picture as a whole is the same (see Fig. 1). The whole thing is a beautiful example of the application of physical chemistry in bio-chemistry and medicine. Even with the five-hundredfold diluted solution there is no equilibrium at any point at which the heart can go on functionating, and the muscle is finally poisoned just as with the 1 in 200 concentration, but the absorption is slower and the system —*cardiac muscle, saline, and drug*—moves more slowly towards equilibrium. Contrasted with this, even so high a concentration as 1 in 70 does not poison when serum is the circulating medium instead of saline, but instead the system—*cardiac muscle, serum and drug*—comes into equilibrium at the stage of therapeutic effect, and remains there steadily for days until the drug becomes changed or excreted. The drug has to distribute itself between saline and cardiac tissue in the one case and between serum and cardiac tissue in the other.

In the former case the *Coefficient of Distribution* is a high one and practically all the drug goes on passing over into the heart. If the saline is perfused long enough the heart will be overcome, even with a high dilution in the saline.

In the case of the serum, the *Coefficient of Distribution* of the drug between cardiac muscle and serum is a comparatively low one, and even at a much higher concentration of the drug in the blood an equilibrium point will soon be reached at which no more drug will leave the blood and pass into the heart muscle. The amount in the blood will then act as a fly-wheel regulating the amount kept up in the heart. If the amount in the blood diminishes, some will slowly diffuse out from the heart till a lower equilibrium-point is reached with the heart less under the digitalis control. Proceed now in the opposite direction and increase the concentration of the drug in the blood, and the concentration of the drug in the heart muscle will go up accordingly to a higher equilibrium-point. So, corresponding to each concentration in the blood there will be a concentration in the heart tissue. As the concentration in the heart tissue is heaped up that organ comes more and more under the influence of the drug, and, finally, after passing through the therapeutic stage, there is a level or range at which it becomes embarrassed and finally stops beating.

It is interesting here to compare the difference between chloroform and digitalis in action upon the heart in the light of this result. Chloroform is a readily diffusible body, easily got rid of by lungs and kidney. If the administration is stopped for a few minutes the concentration of the chloroform in the blood rapidly falls, and the heart recovers and again beats more rapidly. But digitalis is a slowly diffusing substance, not rapidly got rid of from the blood nor quickly moving from blood to heart, or vice versa, even when injected directly into the blood stream. As shown in most of the experiments recorded below, except where the dose is a very huge one, it is some hours before any effect is seen. It is well known to physicians that when the drug is given by the mouth little effect is seen for a day, or even till the second day. Naturally, in the disappearance of the effect of the drug there is the same slowness in the inverse order, the drug slowly coming out of its interlocking position in the cardiac muscle as the concentration of the drug in the blood slowly diminishes.

This is the chemico-physical basis which really underlies the phenomenon usually described as the cumulative action of digitalis, and teaches a twofold lesson—first, as to the proper administration of digitalis; and, secondly, as to which among the digitalis group of glucosides should be chosen to reduce this undesirable result to a minimum. In the first place, the drug should be pushed by a physician having large experience of such cardiac cases until the full therapeutic advantage is developed, and then the dosage should be largely depressed, just to compensate, and no more, for the amount of drug destroyed or slowly excreted. There should be no attempt made by pushing afterwards to attain the impossible, as that will only result, on the chemico-physical basis above outlined, in driving the heart on into the full physiological stage, where the output is diminished and the heart embarrassed and stopped (see later parts of Tracings 1 to 3).

Secondly, we see in the case of the saline experiments that where the *Coefficient of Distribution* between heart and circulation fluid is a high one, it is almost impossible to get the concentration of drug in the circulation fluid so low that an equilibrium is obtainable at the therapeutic stage. Now such an evil result would be accentuated if the drug had a stronger affinity for cardiac muscle, and had to be given in still lower concentration. Hence a stronger drug—such as strophanthus—is not so safe, even in correspondingly less dose, than a digitalis glucoside, because it cannot be regulated so nicely. It possesses more tendency to go into the heart, stay there, and become cumulative for succeeding doses. A drug with less specific affinity and more readily diffusible in or out, will also have a larger range and *factor of safety* between its therapeutic and its lethal dose, than a more specific one entering into firmer union with the cardiac tissue at lower concentration. Accordingly, in treating ordinary heart conditions of failing compensation, it is distinctly the weaker drug that is indicated and not the stronger one, and also the more readily soluble and diffusible one, so that accumulation may be avoided.

What constituent is it in the blood which confers upon it this power of retaining such a drug as digitoxin and balancing against the pull of the heart for it? It is probably in part the protein of the blood, and in part the fatty constituents, as in the case of ordinary anaesthetics, and an exhaustive investigation is required as to whether it is cardiac proteins or cardiac lipoids which absorb and hold these glucosides that act so powerfully on the heart. In any case, some organic constituent in the blood is pitted against another organic constituent in the heart muscle for the possession of the dose of cardiac glucoside, and the ratio of distribution varies for each glucoside and determines the specific power of that glucoside.

EXPERIMENTS.

As it was found that subcutaneous injection in mammals caused a certain amount of inflammation and oedema, the drug was in most cases given by intravenous injection followed by a small amount of normal saline. By this method the drug can be introduced almost painlessly and very effectually; the smallest trace of phlebitis or other evil result has never been observed, and in those clinical cases where the condition of the stomach contraindicates administration by the mouth intravenous injection of digalen can be recommended. There is the added advantage of increased rapidity of action over the ordinary oral administration of digitalis, although even with intravenous injection a full effect is not obtained until the expiration of three or four hours. (See experiments.) The reason for this is to be found in the chemico-physical explanation of the action of the drug given above.

EXPERIMENT I.—*Continued Administration of Digalen in Medium Doses.*

Rabbit of 2,090 grams. Initial rate of heart, 43 in 10 seconds. *First Day.* At 11.45 a.m., rate 43 in 10 seconds. At 11.52 a.m., injected intravenously 3 c.cm. of digalen; at 11.53 a.m., rate 46 in 10 seconds; at 11.56 a.m., rate 38 in 10 seconds; at 11.57 a.m.,

* According to recent determinations by Boycott, *Proc. Physiol. Soc.*, November, 1911, the blood volume in the rabbit is only one-twentieth of the body weight.

rate 40 in 10 seconds; at 12.2 p.m., rate 42 in 10 seconds; at 12.16 p.m., rate 46 in 10 seconds; at 12.53 p.m., rate 45 in 10 seconds. At 2.56 p.m., injected intravenously 3 c.cm. of digalen; at 3.4 p.m., rate 45 in 10 seconds. At 4.3 p.m., injected intravenously 3 c.cm. of digalen; at 4.36 p.m., rate 47 in 10 seconds. Total amount administered in first day, 9 c.cm.

Second Day. At 11.12 a.m., rate 35 in 10 seconds. No digalen given.

Third Day. At 11.15 a.m., rate 28 to 35, and varying rhythmically in rate, fast and slow alternately.

Fourth Day. At 1.30 p.m., rate 34 to 36 in 10 seconds.

Fifth Day. At 11.30 a.m., rate 40 in 10 seconds.

Seventh Day. At 11.23 a.m., rate 39 in 10 seconds, regular. At 11.45 a.m., injected intravenously 6 c.cm. of digalen; at 11.52 a.m., rate 46 in 10 seconds; at 2.50 p.m., rate 49 in 10 seconds.

Eighth Day. At 11.15 a.m., rate 33 in 10 seconds.

Ninth Day. At 11.0 a.m., rate 41 to 43 in 10 seconds. Note that there is remarkable slowing of the heart on the day succeeding administration, and that this slowing is prolonged in duration; note also the low toxicity of the digalen.

EXPERIMENT II.—*Continued Administration of Digalen in Smaller Doses.*

Rabbit of 1,630 grams. Initial rate of heart, 50 in 10 seconds.

First Day. At 3.54 p.m. rate 50 in 10 seconds. At 3.57 p.m., injected intravenously 2 c.cm. of digalen; at 4 p.m., rate 48 in 10 seconds; at 4.38 p.m. 45 in 10 seconds. At 5.2 p.m., injected intravenously 2 c.cm. of digalen; at 5.4 p.m., rate 44 in 10 seconds; at 6.3 p.m., rate 45 in 10 seconds. At 6.5 p.m., injected intravenously 2 c.cm. of digalen; at 6.7 p.m., rate 47 in 10 seconds; at 6.30 p.m., rate 46 in 10 seconds; at 7 p.m., rate 45 in 10 seconds. At 7.5 p.m., injected intravenously 2 c.cm. of digalen; at 7.6 p.m., rate 46 in 10 seconds. Total amount administered during first day, 8 c.cm.

Second Day. At 11.37 a.m., rate 42 in 10 seconds. At 11.40 a.m., injected intravenously 2 c.cm. of digalen; at 11.42 a.m., rate 42 in 10 seconds; at 12.10 p.m., rate 33 in 10 seconds; at 12.50 p.m., rate 32 in 10 seconds. At 12.56 p.m. injected intravenously 2 c.cm. of digalen; at 12.58 p.m., rate 36 in 10 seconds; at 2.10 p.m., rate 36 in 10 seconds. At 2.18 p.m., injected intravenously 2 c.cm. of digalen; at 2.20 p.m., rate 39 in 10 seconds; at 3.2 p.m., rate 31 in 10 seconds. At 3.10 p.m., injected intravenously 2 c.cm. of digalen; at 3.14 p.m., rate 35 in 10 seconds; at 3.40 p.m., rate 30 in 10 seconds. At 3.45 p.m., injected intravenously 2 c.cm. of digalen; at 3.55 p.m., rate 34 in 10 seconds. Total amount administered in second day, 10 c.cm, making 18 c.cm. in first and second days. The heart-rate has been reduced from 50 in 10 seconds to 30-34 in 10 seconds.

Third Day. At 1.45 p.m., rate 38 in 10 seconds. No digalen administered this day.

Fourth Day. At 3.35 p.m., rate is 31 in 10 seconds. No digalen administered.

Fifth Day. At 12.55 p.m., rate is 44 in 10 seconds; at 5.40 p.m., rate 36 in 10 seconds.

Twelfth Day. At 4.40 p.m., rate steady at 40 in 10 seconds.

EXPERIMENT III.—*Effects of Large Dose of Digalen Injected Intravenously.*

This experiment was really carried out to determine the minimal lethal dose, but the glucoside was so much less toxic than was expected that the animal did not die from the amount injected.

This amount was, however, so considerable that paralysis of the vagus with increased heart-rate was obtained as with large doses of digitalis.

Rabbit of 2,290 grams. Initial rate of heart-beat before drugs, 36 in 10 seconds.

First Day. Heart-rate at 3 p.m., 36 in 10 seconds. At 3.5 p.m., injected 5 c.cm. of digalen into marginal vein; at 3.15 p.m., heart-rate 30 in 10 seconds; at 4.50 p.m., 32 in 10 seconds; at 5.47 p.m., 32 in 10 seconds.

Second Day. Heart-rate at 12 noon, 42 in 10 seconds; at 5.30 p.m., 40 to 42 in 10 seconds. No drug given this day as heart so much above normal.

Third Day. Heart-rate at 11.55 a.m., 40 in 10 seconds. Injected 5 c.cm. of digalen intravenously at 12.7 p.m.; at 12.9 p.m., heart-rate 36 in 10 seconds; at 12.12 p.m., 37 in 10 seconds; at 1.44 p.m., 40 in 10 seconds; at 6.25 p.m., 38 in 10 seconds.

Fourth Day. At 11.15 a.m., heart beating almost too fast to count and irregularly; rate about 54 in 10 seconds; at 5.30 p.m., 44 in 10 seconds.

Fifth Day. At 11.40 a.m., beat 40 to 42 in 10 seconds. At 11.55 a.m., injected 5 c.cm. of digalen intravenously; at 11.58 a.m., 36 to 38 in 10 seconds.

Sixth Day. At 11 a.m. rate almost uncountable at about 54 in 10 seconds. The rate remained high for about three days, and then fell to about normal again. The animal, which had received about 15 c.cm. of the digalen solution within four days, completely recovered, a demonstration of the exceedingly low toxicity of the drug, although the action on the heart was pushed past the slowing stage into the rapid stage accompanying vagal paralysis.

EXPERIMENT IV.—*Still Larger Doses of Digalen.*

Rabbit of 2,250 grams. Initial rate of heart beat before drugs 42 in 10 seconds.

First Day. At 4.20 p.m., rate 42 in 10 seconds; injected 8 c.cm. of digalen intravenously; at 4.30 p.m., rate 37 in 10 seconds; at 1.55 p.m., 34 in 10 seconds; at 5.45 p.m., 32 in 10 seconds.

Second Day. At 12.5 p.m., 48 in 10 seconds; at 5.35 p.m., 44 in 10 seconds.

Third Day. At 12.25 p.m., 45 in 10 seconds. At 1 p.m. injected 10 c.cm. of digalen intravenously; rate immediately after 47 in 10 seconds; at 1.5 p.m., 42 in 10 seconds; at 1.50 p.m., 40 in 10 seconds; at 5.30 p.m., 39 in 10 seconds.

Fourth Day. At 11.55 a.m., rate 43 in 10 seconds; at 5.30 p.m., 46 in 10 seconds,

Fifth Day. At 12 noon, 38 in 10 seconds.

Sixth Day. At 11 a.m., 35 in 10 seconds.

Seventh Day. At 5 p.m., 42 in 10 seconds; a return to the normal rate.

This animal survived and remained quite well, although it received a dose of 8 c.cm. of the drug, followed within two days by another dose of 10 c.cm., making 18 c.cm. in all. Except for a very short period after the injection when there is slowing, the rate of the heart is increased with such large doses. The most striking effect is the low toxicity accompanying a marked cardiac action.

EXPERIMENT V.—*Minimal Lethal Dose of Digalen.*

Rabbit of 2,130 grams. Initial rate of heart, 44 in 10 seconds.

At 3.28 p.m., rate 44 in 10 seconds, very regular; at 3.37 p.m. injected intravenously 10 c.cm. of digalen; at 3.40 p.m., rate 37 in 10 seconds; at 3.41 p.m., rate 38 in 10 seconds; at 3.43 p.m., 37 in 10 seconds. At 4.20 p.m., rabbit dead; heart found *post mortem* in diastole.

EXPERIMENT VI.—*High Toxicity of Tincture of Digitalis (Standardized).*

Rabbit of 1,880 grams. Initial rate of heart, 39 in 10 seconds.

At 12.5 p.m., rate 38 to 40 in 10 seconds.

At 12.10 p.m., injected intravenously 2 c.cm. of standardized tincture of digitalis.

At 12.10 p.m. animal dead.

EXPERIMENT VII.—*Toxicity of Small Dose of Tincture of Digitalis (Standardized).*

Rabbit of 1,790 grams. Initial rate of heart, 46 in 10 seconds.

At 12.19 p.m., rate 46 in 10 seconds.

At 12.21 p.m., injected 2 c.cm. of a tincture intravenously.

At 12.22 p.m., rate 37 in 10 seconds; at 4.10 p.m., animal lying on side, rate 56 to 60 in 10 seconds; at 4.20 p.m., heart becomes blocked and irregular, fast and slow alternately, and finally stops.

This experiment illustrates the high toxity of the mixed glucosides in digitalis tincture as contrasted with digalen, and taken with Experiment VI, shows that digitalis in tincture cannot be used intravenously, while digalen can be so used with safety.

EXPERIMENT VIII.—*Determination of Lethal Dose of a Standard Tincture of Digitalis.*

Rabbit of 2,140 grams. Initial rate of heart, 40 in 10 seconds. Injected intravenously 5 c.cm. of a "good" physiologically standardized tincture of digitalis. The animal died almost immediately. Heart found after death in diastole.

EXPERIMENT IX.—*Lethal Dose of Tincture of Digitalis.*

Rabbit of 1,490 grams. Initial rate of heart, 38 in 10 seconds.

First Day. At 3.13 p.m. injected intravenously 2 c.cm. of standardized tincture of digitalis; at 3.15 p.m., rate 28 in 10 seconds; at 3.17 p.m., 32 in 10 seconds; at 3.20 p.m., 34 in 10 seconds.

Second Day. At 3.5 p.m., rate about 50 in 10 seconds, very rapid with faint sounds. At 3.25 p.m. injected intravenously 3 c.cm. of standardized tincture of digitalis; rate just after injection 42 in 10 seconds; one minute later, rate 37 in 10 seconds; at 3.28 p.m., 23 in 10 seconds, and heart very irregular; at 4.30 p.m. the animal is dead; heart found on examination after death in diastole.

EXPERIMENT X.—*Lethal Dose of Tincture of Digitalis.*

Rabbit of 1,850 grams. Initial rate of heart, 37 in 10 seconds. At 5.10 p.m. injected very slowly 4 c.cm. of tincture of digitalis; the animal died almost instantly. The heart was found *post mortem* in diastole.

EXPERIMENT XI.—*Continued Administration of Standardized Tincture of Digitalis.*

Rabbit of 1,600 grams. Initial rate of heart, 44 in 10 seconds.

First Day. At 2.31 p.m., rate 44 in 10 seconds. At 2.33 p.m. injected intravenously 2 c.cm. of a standard tincture; at 2.36 p.m., rate 40 in 10 seconds; at 3.15 p.m., rate 40 in 10 seconds. At 3.19 p.m. injected intravenously 2 c.cm. of standard tincture; at 3.22 p.m., rate 40 in 10 seconds; at 3.50 p.m., rate 40 in 10 seconds. At 3.52 p.m. injected intravenously 2 c.cm. of standard tincture; at 3.56 p.m., rate 40 in 10 seconds. Total amount injected on first day, 6 c.cm. of standard tincture.

Second Day. At 1.47 p.m., rate 41 in 10 seconds. No digitalis given.

Third Day. At 3.55 p.m., rate 36 in 10 seconds. At 4 p.m. injected intravenously 2 c.cm. of standard tincture; at 4.3 p.m., rate 36 in 10 seconds; at 4.7 p.m., 37 in 10 seconds; at 4.55 p.m., 46 in 10 seconds.

Fourth Day. At 12.57 p.m., 54 in 10 seconds; at 5.41 p.m., 42 in 10 seconds.

EXPERIMENT XII.—*Absence of all Activity when an Active Standardized Tincture of Digitalis is Evaporated to Dryness and made up to an Emulsion of Equal Volume in Saline.*

Rabbit of 1,220 grams. Initial rate of beat, 55 in 10 seconds.

First Day. At 2.5 p.m., rate 55 in 10 seconds. At 2.59 p.m. injected 3 c.cm. of saline suspension of digitalis; at 3 p.m., 56 in 10 seconds. At 3.45 p.m. injected 4 c.cm. of saline suspension of digitalis; at 3.50 p.m., rate 56 in 10 seconds; at 4 p.m., 54 in 10 seconds.

Second Day.—At 2.7 p.m., rate 51 in 10 seconds; at 5.30 p.m., 51 in 10 seconds.

This animal showed no signs of any effect from an amount of a saline emulsion corresponding to 7 c.cm. of this tincture, which was the same as killed in the previous three experiments, and also killed a frog, heart in systole, within one hour, and perfused through the isolated rabbit heart at a dilution of 1 in 200 in Ringer's solution arrested the heart in systole within 30 minutes.

EFFECTS OF PERFUSION OF THE DRUG IN SALINE THROUGH THE ISOLATED MAMMALIAN HEART.

The hearts used in these experiments were taken from medium sized rabbits, so that the results can be strictly compared with those obtained in the previous section on intravenous injection.

The perfusion was made through the coronary arteries from the aorta, Ringer's saline saturated with oxygen in the usual way being used. The drug was added, in the amounts stated under each tracing, to 1 litre of the Ringer's saline. After the tracing of the heart-beat had become steady, as shown in the first section of each tracing, the connexion with the warmed saline containing the drug was established and the variations in heart-beat recorded. For comparison, portions of this record belonging to the time intervals noted under each portion have been brought together. The lowest trace shows time in seconds, the line above is the injection signal, and the upper trace is that of the heart apex, the heart being suspended freely by the cannula fixed in the aorta.

The three experiments illustrated by the tracings are samples showing concordant results with those obtained in other experiments. In each case there is a pure digitalis effect shown of: (1) Increase in force, shown by the increased amplitude of beat; (2) slowing of the heart; (3) increased slowing of the heart accompanied by decrease of force; (4) arrest in systole, or nearly so, with marked increase in tonus, shown by the elevation of the base line.

The experiment in Fig. 1 is with the digalen solution diluted two hundred times with saline. As the digalen solution only contains 0.3 mg. of the amorphous digitoxin in 1 c.cm., this represents a concentration of 3 in 10,000, and it follows that the concentration being perfused in this case is 3 in 10,000 × 200, or 3 in 2,000,000 parts.

In the second experiment, illustrated by Fig. 2, the concentration is 2 ampoules of 1 c.cm. per litre, corresponding in actual strength of drug to 3 parts in 5 millions. Yet even at this exceedingly low concentration, when saline is the perfusing medium, there is no equilibrium, but the heart goes on absorbing from the saline until it has taken up enough to stop its beating. With such a concentration as this in blood there would be no apparent effect, for the reasons given in the preceding section.

The tracing shown in Fig. 3 is that obtained by adding 2.5 c.cm. of a saline solution containing 0.9 mg. in 1 c.cm. to 1 litre of saline—that is to say, 2¼ parts in 1,000,000. This is the strongest of the three solutions shown, as the tracing likewise demonstrates.

CONCLUSIONS.

1. Present methods of standardization of such drugs as digitalis rest on an erroneous basis, which presupposes a direct linear relationship between therapeutic dose and lethal dose, whereas in a varying mixture of active substances in a galenical preparation no such relationship need exist.

2. The ratio of lethal dose to therapeutic dose may be defined as the factor of safety of a drug.

3. In picking out from a mixture of active principles that one which is most advantageous therapeutically, the substance should be chosen which possesses the highest factor of safety, and not that one with the highest toxic action, and hence producing an effect in smallest quantities. For example, the experiments above recorded show that soluble, or amorphous, digitoxin has a higher factor of safety than the mixed glucosides of standardized tincture of digitalis; and, again, tincture of digitalis is safer than strophanthus, or mowrin, or hederin.

4. The physico-chemical basis determining the toxicity of such a cardiac drug, as also the factor of safety, is the relative adsorption, or combining powers for the drug, of

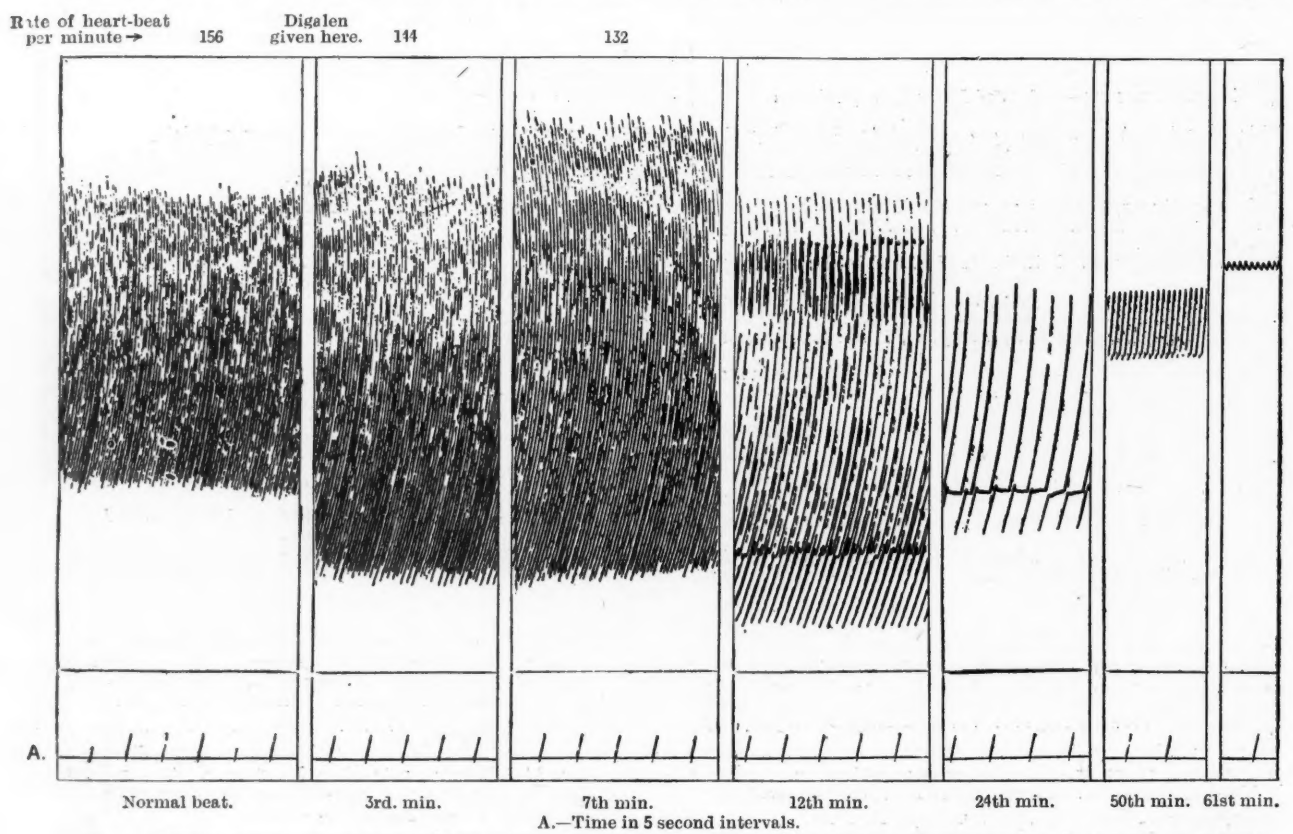

Fig. 1.—Rabbit's heart perfused with Ringer's solution. Effect of digalen at 1 in 200 dilution (5 ampoules of 1 c.cm. to 1 litre of Ringer's solution). Tracing reads from left to right. Observe increase of force of beat and slowing of heart and final tonicity.

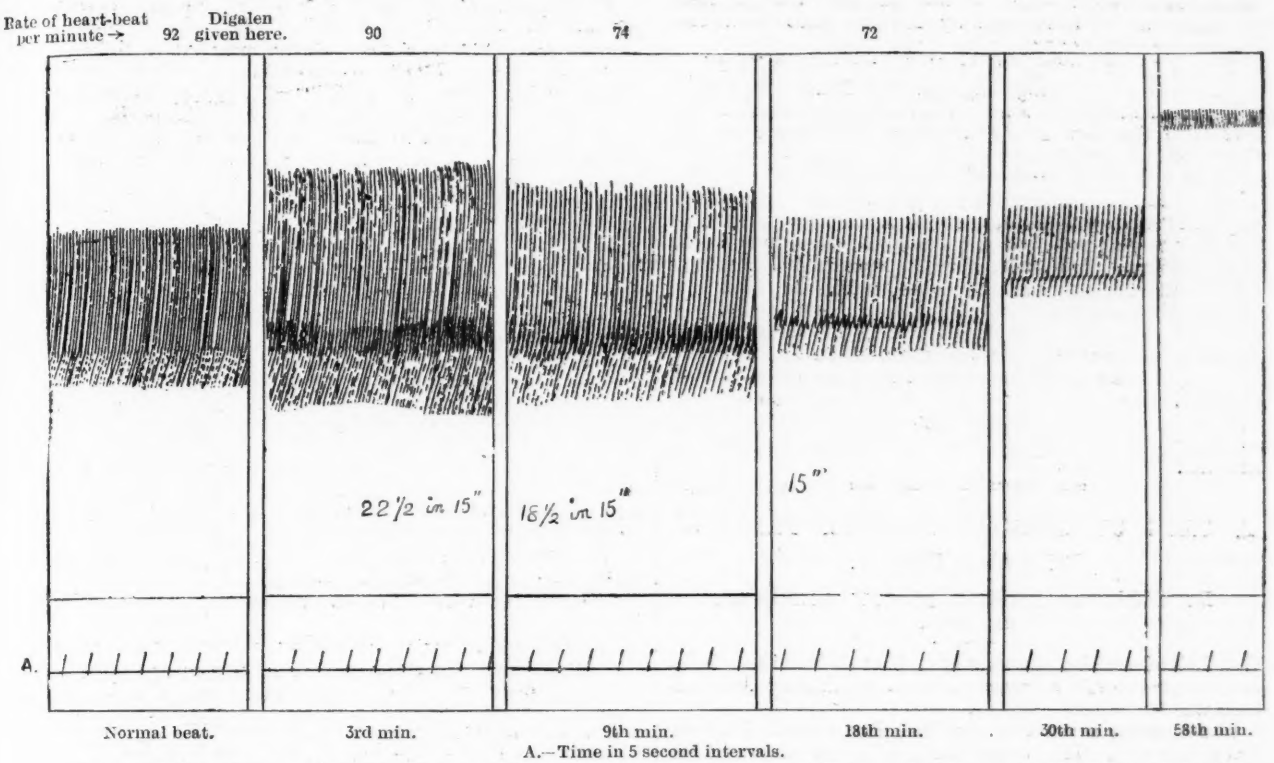

Fig. 2.—Rabbit's heart perfused with Ringer's solution. Effects of digalen at 1 in 500 (2 ampoules of 1 c.cm. in 1 litre). The increase in tonicity is well shown, as also increased force and diminished frequency at the earlier stages.

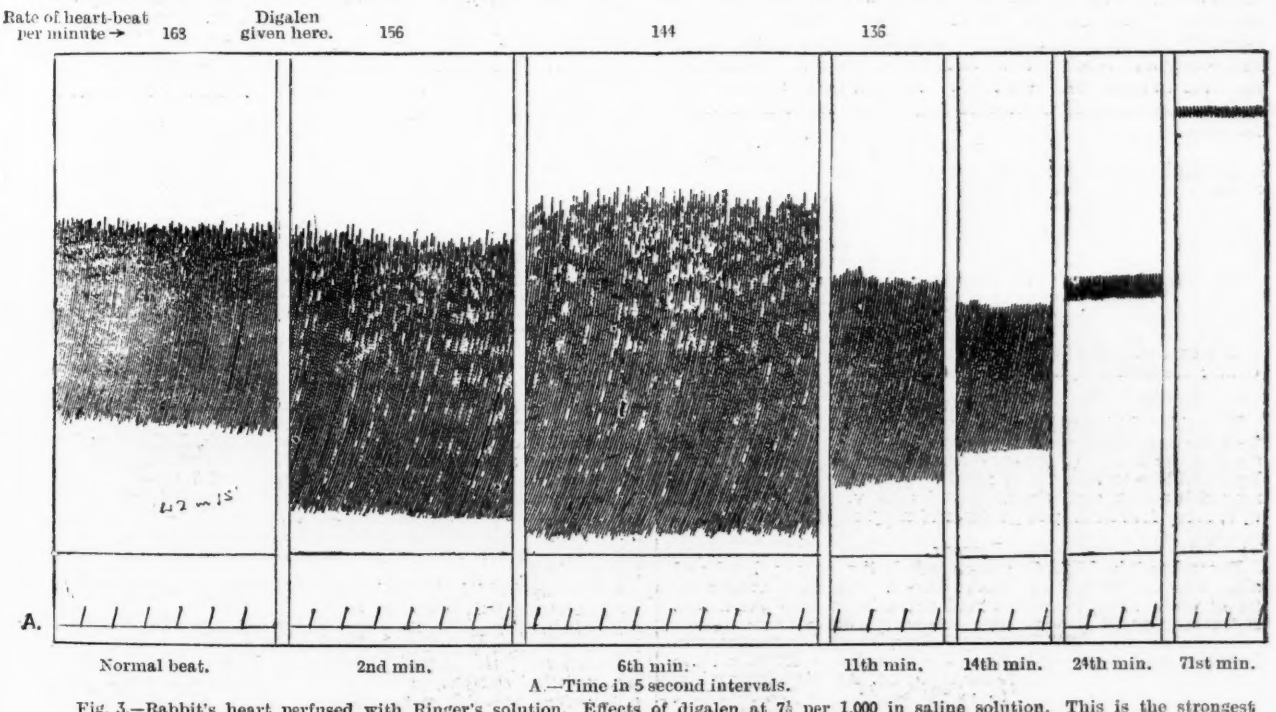

Fig. 3.—Rabbit's heart perfused with Ringer's solution. Effects of digalen at 7½ per 1,000 in saline solution. This is the strongest concentration tested on the isolated heart. Note the strong tonic effect produced as shown by elevation of lever at end above highest point of systole of normal beat.

the blood on the one hand and the cardiac tissue on the other. The ratio of cardiac tissue adsorption to blood adsorption fixes the value of the Coefficient of Distribution, and on this the effect of the drug depends. Although the Coefficient of Distribution is nearly constant, it varies somewhat at different concentrations of the drug, and if the Coefficient of Distribution decreases with increasing concentrations, this will lead to a higher factor of safety. In comparing different drugs with one another, a high Coefficient of Distribution means high toxicity, and usually a low factor of safety and a rapid cumulative action.

5. Soluble digitoxin, on account of its solubility in water, can be used for intravenous injection. This solubility prevents any pain or local inflammation, such as is occasioned by injection of alcoholic solutions, and the low toxicity as compared with that of the mixed glucosides in tincture of digitalis renders intravenous administration safe (compare Experiments IV and V with VI, VII, VIII, and IX). At the same time, a full therapeutic effect, which is very persistent, is obtained on the heart.

6. In administering soluble digitoxin (digalen) a full therapeutic effect should be aimed at, and thereafter the

drug should not be pushed farther, but just enough given to maintain the advantage by keeping pace with the elimination of the drug.

7. The heart tracings show that a pure digitalis effect is obtained on perfusing digalen, the therapeutic effect being marked, and the tonus at the end very considerable.

8. The tracings also demonstrate the much higher Coefficient of Distribution of the drug in saline solution than in the blood so resembling the chloroform action. Even at the lowest concentration tested no therapeutic equilibrium is established, but the heart goes on taking up the drug from the saline till the death point is reached. This does not occur with a much heavier dosage in the intact animal where the drug is dissolved in the blood.

9. Soluble digitoxin shows none of that haemolytic action in destroying red blood corpuscles which is possessed by those sapo-glucosides which act on the heart, as, for example, the digitonin present in ordinary tincture of digitalis.

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A CASE OF CARDIAC FAILURE TREATED BY CANE SUGAR.

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BARMOUTH.

THE following notes of a case of cardiac failure treated by cane sugar show how remarkably an apparently hopeless case was benefited by its use.

The patient, a plumber, aged 28, first consulted me on December 4th, 1910, complaining of great shortness of breath and swelling of his abdomen, which had commenced in July, 1910, and gradually grew worse; he had, however, continued his occupation. He had previously always been healthy and temperate. In March he was helping to pull a heavily-laden hand-cart up a stiff hill, when he suddenly felt giddy and faint, great difficulty in getting his breath, and had to sit down for a time. After a short rest he was able to continue his work, and thought no more about this incident.

State on Examination.

The patient looked ill, dusky complexion, anxious expression, marked dyspnoea, had to gasp between his sentences whilst talking to me. *Heart:* Faint apex beat, little to left of left nipple line, diffused. No definite bruit heard at apex, but a galloping, tumbling kind of rhythm, very irregular and intermittent. *Aorta:* No bruit heard, but second sound accentuated. *Pulse* 100, feeble, small, irregular and intermittent. *Lungs* normal. Respirations 35. *Abdomen* much enlarged and definite signs of dropsy. Slight oedema of skin over lower part. Girth measurement at level of umbilicus 35½ in. *Liver* not enlarged to any extent. *Appetite* only fairly good. *Tongue* fairly clean. *Urine:* No albumen, high-coloured urates.

Diagnosis.

I considered his condition of failing heart most serious, and that the cause was probably due to damage of mitral valve at the time he was helping to pull a hand-cart the previous March. I ordered him to bed, to lie absolutely quiet, put him on light nourishing diet and tinct. digitalis ♏ v, tinct. nucis vom. ♏ v, every four hours; large doses of mag. sulph. mornings.

Progress.

December 7th, 1910. Condition much the same; head and shoulders well propped up with pillows. Taking nourishment fairly well. Passed three pints of urine in twenty-four hours. Increased tinct. digitalis to ♏ x doses every three hours.

December 12th, 1910. Feeling better, breathing more comfortably, and sleeping better. Better colour. Pulse a little steadier, 88. Heart sounds much the same. Appetite improving. Increased tinct. digitalis to ♏ xij every four hours; added liq. strychninae ♏ iij. Girth measurement of abdomen less 32 in.

December 17th, 1910. Substituted strophanthus for digitalis. Condition much the same.

December 22nd, 1910. Much the same. Returned to digitalis and strychnine. Calomel gr. v at night occasionally.

December 26th, 1910. Rather worse. Increased amount of fluid in abdomen. Pulse 88, respirations 40. Slight oedema at bases of both lungs. Passing less urine. Heart sounds much the same.

December 31st, 1910. Same galloping sounds heard at apex, with a faint systolic bruit as well. Continuing digitalis and strychnine, also mag. sulph. mornings and calomel at night. Had a consultation with Dr. Wood, who gave a very bad prognosis.

January 2nd, 1911. Discontinued digitalis for a while and gave pot. iod. instead.

January 4th, 1911. Slightly better; breathing more comfortable. Passing more urine, 2 quarts. Amount of dropsy much the same.

February 1st, 1911. Considerably worse; more fluid in abdomen; signs of fluid in left pleura; also some pleuritic frictions in left axilla causing pain. No rise of temperature. Heart sounds the same; bruit still heard at apex.

March 3rd, 1911. More comfortable, and is now lifted out on couch and wheeled out of doors when fine. Appetite better; sleeping better. Certainly improved by being in open air. Still taking cardiac drugs.

April 30th, 1911. Condition of heart much the same. More comfortable on the whole. Amount of fluid in abdomen much the same, though fluid in left pleura less marked. Taking nourishment fairly well.

May 5th, 1911. Not so well; not well enough to go out of doors last few days. Abdomen increasing in size; oedema of skin of abdomen more marked. Breathing more distressed. Respirations 40; pulse feebler, 100. Heart sounds at apex very irregular and bruit distinct. Appetite bad. Colour dusky.

May 7th, 1911. Very ill, condition appears hopeless. Taking very little nourishment and vomiting at times. Fluid in both pleurae at bases; tapped abdomen, and drew off 22 pints.

May 8th, 1911. Much relieved by tapping, better colour, and able to take more nourishment, Pulse 80. Respirations 30. Heart sounds much the same.

May 10th, 1911. Able to be wheeled out of doors again, and seems to be improving slightly. Still taking digitalis, which seems to do more good than any other drugs.

June 2nd, 1911. Breathing becoming difficult again, unable to lie down, not well enough to go out of doors for some days. Fluid reaccumulating in abdomen. Pulse 94, weaker. Heart's action weaker, sounds of same character.

June 11th, 1911. Much worse. Abdomen filled up again. Breathing very bad. Pulse very feeble, 100. Oedema of bases of both lungs, and fluid in left pleura. Abdomen tapped, and 16 pints drawn off.

June 12th, 1911. More comfortable since fluid of abdomen removed. Condition of heart much the same. Commenced sugar treatment. Taking 5 oz. Glebe's granulated cane sugar a day. Continuing small doses of digitalis as well.

June 16th, 1911. Discontinued all medicines with the exception of occasional doses of mag. sulph. and calomel. Persevering with the sugar, taking the full 5 oz. most days. Occasional feeling of nausea. Able to be wheeled out in bath chair.

June 20th, 1911. Says he feels decidedly better, much more comfortable, and able to lie down at night now. Better colour. Breathing much better. Pulse a little stronger, but still very irregular and intermittent. Heart sounds much the same. Some fluid in abdomen, but no marked increase. Fluid left side of chest less. Oedema at bases of lungs less. Taking the 5 oz. of sugar regularly. Appetite good.

July 2nd, 1911. Decided improvement in general condition, able to go out in bath chair and remain out all day. Much better colour. Appetite good. Taking the full 5 oz. of sugar without any inconvenience. No increase of fluid in abdomen. No signs of fluid in left pleura. Diminished breath sounds at left base behind, due to thickened pleura. No oedema of lungs.

August 30th, 1911. Still improving, [illegible] every day in bath chair, and able to sit upright in chair. Taking the 5 oz. of sugar regularly. Appetite good. Sleeps well. Seems much better in every way. Scarcely any fluid can be detected in abdomen and none in chest. Heart sounds more regular. Pulse stronger. Passing normal quantity of urine.

September 12th, 1911. Wonderfully better; still out of doors every day in chair. Says he would like to walk, but I advised him not. No appreciable quantity of fluid in abdomen. No oedema of skin. Good colour. Heart sounds less irregular. Bruit not always heard. Pulse stronger.

He continued to improve up to October 9th, 1911, when he had a severe shock on being told that a friend and neighbour of his had been run over by a train and had lost a leg. He experienced difficulty in breathing again, not eating or sleeping well. Pulse weaker. I ordered him to bed for about a week, and gave him digitalis for a few days. He soon improved with the rest, and was able to go out in his bath chair again on October 16th.

October 20th, 1911. Condition much improved, and is now as well as he was before October 9th.

November 29th, 1911. Has been going out every day in chair, in which he sits up quite comfortably. Says he feels quite well. Appetite good, sleeps well, able always to lie down at night; passing good quantity of urine; no shortness of breath. Has not walked yet, but is very anxious to; is able to stand by himself. Still taking the 5 oz. of sugar. Heart: Apex beat in normal position; no bruit heard; still the continuing irregular rhythm at apex; heart's action considerably stronger. Pulse 80, small, irregular, and intermittent, but much stronger. Lungs normal, with exception of diminished breath sounds at left base. No oedema or fluid in abdomen.

Remarks.

This is evidently a case of failing heart which dates from March 1910, and due to his damaging his mitral valve by overexertion.

From the time he first came under my care he was treated with all the various cardiac drugs, in variable doses, with absolute rest and suitable diet. He at times showed signs of improvement, but it was never lasting, and

he went from bad to worse. I had to tap him on May 7th, 1911, drawing off twenty-two pints from his abdomen. This, one thought, was the beginning of the end. He in a few weeks again had to be tapped; this time sixteen pints were removed.

Since June 12th, 1911, he has taken 5 oz. of sugar a day, hardly missing a single day and almost always taking the full quantity. Only twice since he commenced the sugar has he taken any cardiac drugs, and then only for a few days. Further, he has never again required tapping.

I attribute his remarkably improved condition (his condition at one time appeared absolutely hopeless) solely to the cane sugar. His urine was examined on various occasions and only contained an excess of urates. Whether in time he will sufficiently improve to allow of light work remains to be seen, but I certainly think it well worth while continuing the sugar treatment. Dr. Wood, who saw the patient twice with me before I commenced the sugar treatment, agreed with me that there was little to be done, as it seemed quite a hopeless case. I may add that the patient experienced no inconvenience in taking such a large quantity of sugar, except at the very first, when he occasionally had a feeling of nausea. Before commencing the sugar he had to be almost constantly taking aperients, now he hardly ever takes any.

I am indebted to Dr. Goulston, of Exeter, for the idea of the cane sugar treatment.

A CASE OF OBSCURE FEVER WITH PRONOUNCED NERVOUS SYMPTOMS,

APPARENTLY DUE TO INFECTION BY A LEPTOTHRIX BACILLUS.

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THIS was a case of continued fever of obscure origin, running a course of a little over three weeks, with marked symptoms of disturbance of the nervous and also of the urinary systems. It appears to have been due to a leptothrix bacillus not previously described as a pathogenic organism except in a case recorded by Professor J. Ritchie and Dr. Stuart McDonald,[1] and in five other cases met with by the latter during an epidemic of cerebro-spinal meningitis. These cases were all fatal.

The leptothrix described by Professor Ritchie and Dr. Stuart McDonald occurred in a case of pyaemia and meningitis, and had the same characteristics, except as regards motility. The patient was a child, aged 1½ years. The symptoms were:

1. Diffuse inflammation of the left leg, with a small abscess outside the knee-joint.
2. An abscess in each elbow-joint and suppuration in the right middle ear.
3. Signs of meningitis and hypostatic pneumonia; death.

A leptothrix was recovered from the blood, cerebro-spinal fluid, and from the suppurating joints; its characters and cultural characteristics will be given below. In this case there was also a terminal pneumococcal infection. *Post mortem* there was a purulent subdural meningitis over the left cerebral hemisphere, pia-arachnoiditis in patches over the brain, and spinal meningitis. They found the organism to be pathogenic to monkeys and mice, very slightly to guinea-pigs, and not at all to rabbits. By intraspinal injection in monkeys it produced acute meningitis. It appeared to break down the resistance of the body to other pathogenic organisms.

Dr. Stuart McDonald[2] had previously described 5 cases of meningitis during prevalence of epidemic cerebro-spinal meningitis, in which micro-organisms with the same microscopic characters as this leptothrix bacillus were found in the cerebro-spinal fluid. In none of these cases was the typical meningococcus isolated. In two cases there was a mixed infection with the *Diplococcus crassus*. In one case in which there was a *post-mortem* examination—the patient dying after eight days' illness with typical clinical symptoms of cerebro-spinal meningitis—a fibrino-purulent lepto-meningitis was found on the sides and vertex of the brain. In this case there was a growth on blood-agar after three days like a pneumococcus, with next day a leptothrix formation.

Our patient, Rowland W., aged 23, was a shop assistant. When very young he had a severe attack of chorea, and early in 1911 he had rheumatism, which laid him up for three weeks. These were the only previous illnesses, and he had never had gonorrhoea or any previous difficulty in micturition.

Five weeks previous to admission he was given double work to do, owing to the illness of his manager, and this work involved the keeping of accounts, with which he was unfamiliar. He began to suffer from severe headaches, chiefly frontal, and felt weak and overdone. There was no complaint of sore throat. The headache grew much worse on September 11th, and he gave up work on September 15th. He saw Dr. Stevens on September 19th, who found he had fever, and sent him to bed. The fever continued, with headache, dullness and drowsiness, and slight abdominal swelling. There was no delirium, no diarrhoea, no cough, no pains in or swelling of the joints, and no abdominal pain except a little over the pubes; he had some difficulty in passing water; there was no discharge from the urethra and no history of gonorrhoea.

He was admitted on October 3rd. He had a heavy expression, was dull and listless, and complained of headache; his aspect strongly suggested enteric fever. He was quite clear in all statements, but had little memory of his illness.

Condition on Admission.

Cheeks flushed; pulse regular, not dicrotic, varying in rate from 96 to 110 per minute; respirations 28 to 30; bowels constipated; appetite fair; tongue dry, furred in centre. On examination, chest well formed, lungs normal.

Heart.—Apex beat and area of dullness normal; the sounds showed evidence of affection of heart muscle (toxaemia), in that there was a triple sound at the apex, and the pulmonary second was accentuated.

Abdomen.—Not distended, resonant everywhere; no abdominal pain or tenderness; no ascites. The lower edge of the liver was felt just below the ribs; it was not tender. The splenic dullness was increased, beginning above at the seventh rib, and extending forwards to the anterior margin of the ribs, its tip being just felt. There were three or four doubtful pink spots on the abdomen.

The *urine* contained a trace of albumen, a few pus cells, and a deposit of urates. It had a very peculiar mouselike odour.

Nervous System.—Pupils small, equal, acted well to light and accommodation. Optic discs normal. Knee-jerks exaggerated; superficial reflexes all normal. There was a marked fine muscular tremor with slight twitchings of the muscles. Widal's test, taken once before and once after admission, was negative. During the next few days he lay in a very drowsy state with low muttering delirium, especially at night. Slight retraction of head and stiffness of limbs. He answered questions slowly and complained chiefly of headache and of pains over the bladder. He had great difficulty in micturition. The urine contained a trace of albumen and was somewhat turbid. On October 6th Widal's test was again negative.

Within a few days after his admission to hospital cultures were made from the blood on two occasions from three different veins. Each sample yielded a pure growth of the leptothrix. The same organism had been first recovered in pure culture from the cerebro-spinal fluid. The latter was clear and contained a very large number of lymphocytes; few polymorphs; a differential count gave small lymphocytes 60 per cent., large lymphocytes 33 per cent., polymorphonuclears and endothelial cells 7 per cent.

A specimen of urine removed by catheter with antiseptic precautions gave a similar growth to that found in the blood and cerebro-spinal fluid.

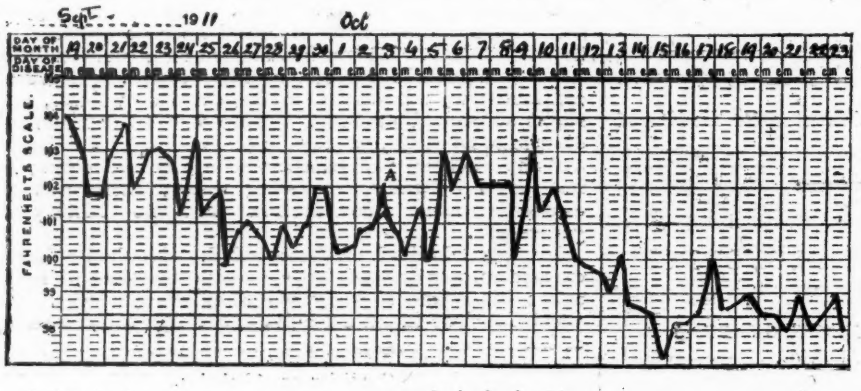
From October 8th to 14th the patient was at his worst; he lay in a drowsy, stuporous condition, with low muttering delirium, with an occasional loud cry, like a patient with meningitis. During the nights the delirium became more violent, and he shouted out and tried to get out of bed. At this time he could not be sufficiently roused to answer questions, and appeared to be somewhat deaf; he lay down in the bed on his back; restlessness was not a marked feature of the illness. The tremor increased, and there was marked subsultus tendinum. At the same time there was some retraction of the

head and neck, slight rigidity of the limbs, no optic neuritis, and no alteration in reflexes except for exaggeration of the knee-jerks and deep reflexes generally. At times he perspired profusely. The urine had to be withdrawn by catheter at first, then for three to four days—October 10th to 14th—there was incontinence of both urine and faeces. There was no diarrhoea, and the stools were pale in colour. The tongue remained very dry, with a brown fur over the dorsum. There was no abdominal distension, and no further enlargement of the spleen or liver. The pulse varied from 100 to 112; it was soft, regular, and dicrotic. A blood examination on October 11th gave red cells 6,420,000, haemoglobin 128 per cent., index about $\frac{16}{15}$, leucocytes 8,000.

Differential count of leucocytes:

Polymorphonuclears	47 per cent.
Small lymphocytes...	29 ,,
Large lymphocytes...	16 ,,
Transitionals	7 ,,
Eosinophiles	0
Myelocytes...	1 ,,

There was a fairly rapid fall of temperature on October 12th and 13th, which, except for a small subsequent rise on the 17th, then remained at or about normal (see Chart). The general



A, admitted to hospital.

symptoms showed a remarkably rapid improvement; he became brighter, the delirium and tremor ceased, and he gradually gained strength. He recovered control over the rectal sphincter almost at once, but not over the bladder for some days longer—the use of the catheter not being required after the 19th. His recovery occurred before the vaccine which was being prepared was available.

On October 21st he was quite convalescent, and left the hospital on November 2nd, somewhat weak, but otherwise quite well. The urine was then of normal specific gravity, clear, with no deposit, and free from albumen.

There was no haemorrhage, no petechial rash, and no herpes throughout.

The cultural characteristics of this leptothrix bacillus are as follows: Recovered from the blood on two occasions, and from three different veins, from the cerebro-spinal fluid, and from the urine. Each sample yielded a pure growth of the leptothrix. Growth was slow, and only occurred on the surface of the agar and not at all in broth primarily. The first visible colony appeared on the third day of incubation; smears made prior to this contained the leptothrix. The colonies appeared as moist, flat, dull, discrete growths with defined, even edges and no wrinkling on the surface. They were transparent, with a milky haze in their substance; they did not cling to the surface of the media, nor were they tough to the touch. In smears the appearance was that of a long, non-septate, non-branching filament; no bacillary forms occurred. They did not stain by Gram's method; no motility observed, except that a wave-like motion often traversed the length of the filament. Growth in gelatine occurred without liquefaction, and the colonies were similar to those on agar. No growth in anaërobic culture. Acid was produced in litmus milk and in litmus glucose, levulose, galactose, maltose, glycerine, and mannite broths. Lactose, saccharose, dextrine, dulcit, and sorbit litmus broths remained unchanged, no acid being found. Indol was not formed, and neutral red broth was not changed. There was no gas formation in any medium.

There is a striking resemblance to the *Bacillus typhosus* in the ferment reactions and indol test. It did not agglutinate with serum from a case of enteric fever. Agglutination occurred in contact with the patient's own serum up to a dilution of 1 in 350.

Subcultures were difficult to carry on, probably through a sensitiveness to drying. The strain was lost at both the subcultures. Lastly, the patient's serum did not agglutinate *B. typhosus*, *B. paratyphosus*, or the dysentery group of bacilli (Shiga and Flexner) 1 and 2.

Briefly stated, the characteristics given by Ritchie and McDonald[3] of the leptothrix in their case are that the bacillus was Gram-negative, motile, grew on all media, in some cases in long forms, did not liquefy gelatine, gave slight acid in milk and glucose, not in lactose, with no gas formation in any medium; agglutination observations were incomplete. Except with regard to motility, the characteristics of the organism in each case therefore correspond. The close correspondence in the reactions of this leptothrix to the *Bacillus typhosus* is interesting in view of the possibility of a mouth leptothrix being in some way the precursor of the latter organism.

With regard to the mode of invasion of the body, McDonald points out that such leptothrix forms are most usually found in infections about the mouth, pharynx, or lungs. One of us (Scott-Williamson), in attempting to make aërobic from anaërobic subcultures of *Bacillus fusiformis* in cases of Vincent's angina, has on three occasions found a leptothrix bacillus, which in subculture had all the appearances of the leptothrix above described, and was in all probability the same organism. He also found it in association with *Diplococcus crassus*. As McDonald has suggested in his cases, it seems probable that in our case the infection of the blood took place through the bucco-pharyngeal mucous membrane. As in two of his cases of epidemic cerebro-spinal meningitis, this leptothrix was associated with *D. crassus*, the presence of the two organisms together in the buccal cavity supports this route of infection.

Clinically the symptoms during the greater part of the illness bore a marked resemblance to an irregular case of enteric fever; to that group of cases of this disease in which the nervous manifestations predominate. The very slight signs of abdominal disturbance, the absence of spots, and of Widal's reaction, etc., of course practically negatived enteric fever; but, in spite of all this, it was at one time strongly suggested.

The blood count is, perhaps, worthy of special note; there was no leucopoenia, the leucocytes being 8,000, but there was a relative increase of lymphocytes, the numbers per cubic centimetre being: Polymorphs 3,760, small lymphocytes 2,320, large lymphocytes 1,280, transitionals 560, myelocytes 80. Eosinophiles were absent in the count. This increase of lymphocytes in the blood may be connoted with that in the cerebro-spinal fluid.

Lastly, the case is another example of the value of lumbar puncture in a case of febrile illness with marked nervous phenomena. The discovery of the bacillus in the cerebro-spinal fluid led in this instance directly to the elucidation of the cause of what was at the time a very obscure illness, and at that period so severe that it seemed likely to prove fatal. As another instance in which a lumbar puncture was of similar value may be mentioned the case of a youth aged 20 with continued fever and symptoms suggesting diffuse meningitis. Lumbar puncture was done and a paratyphoid bacillus removed from the cerebro-spinal fluid.

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[1] Case of Pyaemia and Meningitis associated with a Pathogenic Leptothrix Bacillus, *Journal of Path. and Bact.*, vol. xiii, 1909, p. 119. [2] Observations on Epidemic Cerebro-spinal Meningitis, *Journal of Path. and Bact.*, vol. xii, 1908, p. 447. [3] Loc. cit.

THE foundation stone of a new building which is to take the place of the temporary quarters hitherto used for the Children's Sanatorium at Holt, Norfolk, was laid on December 19th. All building expenditure has been met by Mr. Otto Beit, but the maintenance fund will have to be increased as the new building provides more accommodation than formerly. Donations may be sent to the Honorary Secretary of the Children's Sanatorium, Mr. T. H. Wyatt, M.V.O., 68, Denison House, Vauxhall Bridge Road, S.W.